USDA United States Department of Agriculture
Natural Resources Conservation Service

In cooperation with the Mississippi Agricultural and Forestry Experiment Station

Soil Survey of Prentiss County, Mississippi

How To Use This Soil Survey

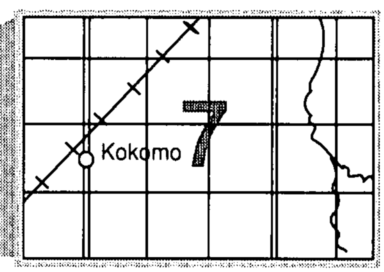
General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

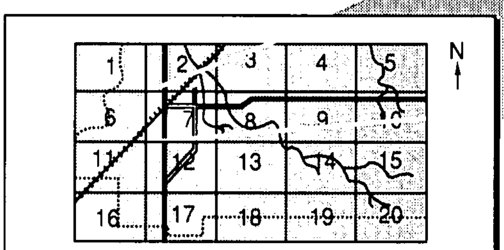
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.



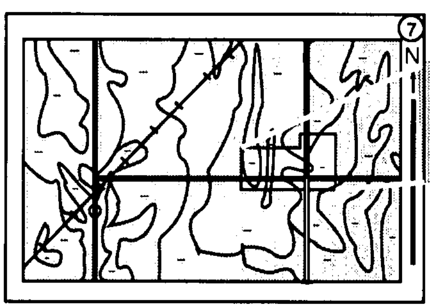
MAP SHEET

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



INDEX TO MAP SHEETS

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



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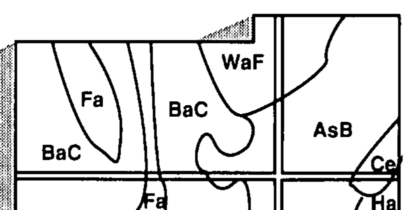

AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1988. Soil names and descriptions were approved in 1995. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This soil survey was made cooperatively by the Natural Resources Conservation Service and the Mississippi Agricultural and Forestry Experiment Station. It is part of the technical assistance furnished to the Prentiss County Soil and Water Conservation District. The Prentiss County Board of Supervisors and the Tennessee Valley Authority provided financial assistance for the survey.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Two previous soil surveys of Prentiss County were published by the U.S. Department of Agriculture in 1907 and 1957. This survey updates the earlier surveys, provides a more detailed soil survey on aerial photography, and contains more interpretive information.

All programs and services of the Natural Resources Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: Contour farming reduces the hazard of erosion in this area of Providence silt loam, 5 to 8 percent slopes, severely eroded.

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Issued October 1997

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Foreword

This soil survey contains information that can be used in land-planning programs in Prentiss County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Various Federal, State, or local regulations may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and minimize the effects of soil limitations. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Homer L. Wilkes

Homer L. Wilkes
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Prentiss County, Mississippi

By Mac H. Robards, Rickey G. Cox, W. Dwain Daniels, and Robert W. Wimbish,
Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
the Mississippi Agriculture and Forestry Experiment Station, the Tennessee Valley Authority, and the Prentiss County Board of Supervisors

PRENTISS COUNTY is in the northeastern part of Mississippi (fig. 1). The total area is slightly over 418 square miles, or 267,603 acres. Booneville, the county seat, had a population of about 7,955 in 1990. Prentiss County had a total population of about 23,278 in 1990.

The county contains numerous creeks and tributaries, which flow in several directions. The western and northwestern parts of the county are drained by Dry Creek, which joins the Hatchie River in Tippah County. The northern part is drained by the Tuscumbia River, which flows north into Alcorn County. The central and southern parts of the county are drained by the Tombigbee River system, which flows southward. The northeastern corner of the county is drained by the Tennessee River system. The streams have formed extensive flood plains and terraces over large portions of the county *(5)*.

About 22 percent of the land area in Prentiss County is on nearly level flood plains. The drainage systems on all of the cultivated flood plains have been altered by the construction of drainage ditches. About 15 percent of the land in the county is on nearly level to strongly sloping terraces. The remaining 63 percent of the land in the county is in upland areas that have a dendritic drainage pattern. The upland ridges are nearly level to moderately sloping, and the side slopes are mainly strongly sloping to steep.

Farming is a major economic enterprise in the county. The main crops include soybeans, cotton, and grain sorghum. Beef and dairy cattle are economically significant. The timber industry is also an important enterprise. Over 30 manufacturing plants are in the

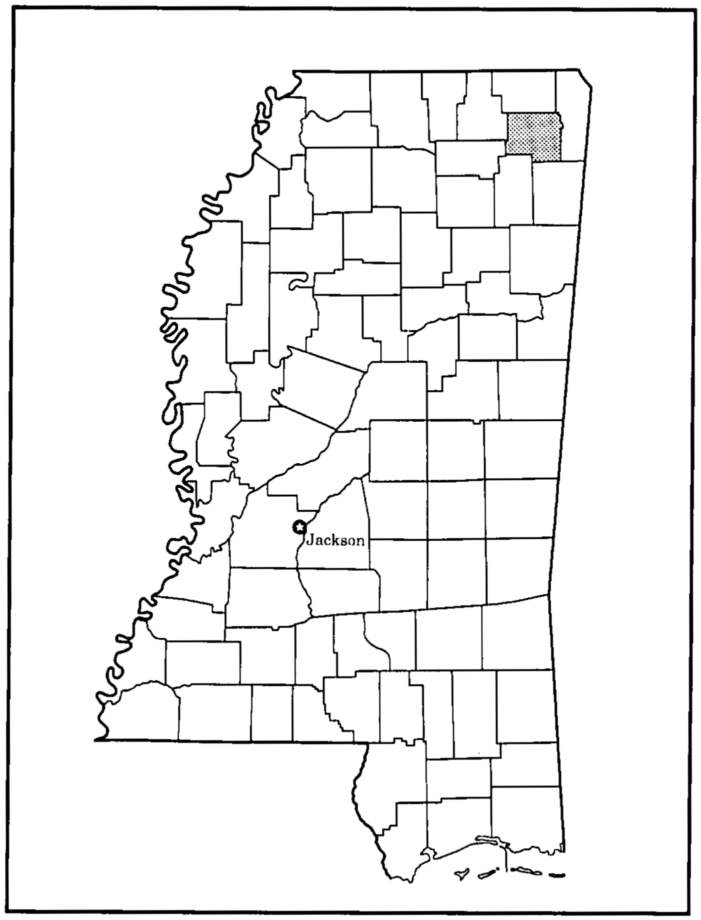

Figure 1.—Location of Prentiss County in Mississippi.

county. These plants manufacture or process pulpwood, furniture, plastic, cheese, meat, and clothing.

Soil scientists have determined that about 25 different kinds of soils are in Prentiss County. The soils vary widely in texture, natural drainage, and other characteristics.

An older survey of Prentiss County was made in 1942 and was published in 1957 *(5)*. This survey updates the earlier survey and provides additional information. Descriptions, names, and delineations of soils in this soil survey do not fully agree with those on soil maps for adjacent counties. Differences are the result of better knowledge of soils, modification of series concepts, intensity of mapping, or the extent of soils within the survey.

General Nature of the County

This section provides general information about Prentiss County. It briefly describes climate, agriculture, history, geology, and water resources.

Climate

Prepared by the National Climatic Data Center, Asheville, North Carolina. Additional information was provided by the Natural Resources Conservation Service Climatic Data Access Facility in Portland, Oregon.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Booneville in the period 1951 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 41 degrees F and the average daily minimum temperature is 31 degrees. The lowest temperature on record, which occurred at Booneville on January 30, 1966, is -8 degrees. In summer, the average temperature is 78 degrees and the average daily maximum temperature is 89 degrees. The highest recorded temperature, which occurred at Booneville on July 28, 1952, is 108 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 55 inches. Of this, 25 inches, or 45 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 20 inches. The heaviest 1-day rainfall during the period of record was 6.67 inches at Booneville on December 26, 1982. Thunderstorms occur on about 58 days each year.

The average seasonal snowfall is 3.6 inches. The greatest snow depth at any one time during the period of record was 7 inches. On an average of 3 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 65 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 8 miles per hour, in spring.

Agriculture

In recent years, soybeans have become the major cash crop in Prentiss County. They replaced cotton, which is now the second major cash crop. In 1982, the county had 564 farms. The average size of the farms was 197 acres *(16)*. The total yields of principal crops harvested in 1985 were 882,000 bushels of soybeans, 5,921 bales of cotton, 575,400 bushels of grain sorghum, 112,000 bushels of corn, and 60,000 bushels of wheat. The livestock on farms included 10,000 head of cattle and calves, 1,800 milk cows, and 3,500 hogs and pigs *(16)*. In 1977, the Mississippi Forestry Commission reported approximately 132,500 acres of commercial forest in Prentiss County.

History

Prentiss County was originally part of Tishomingo County, which was organized in 1836 from territory that had been the hunting reservation of the Chickasaw Indians. After the Pontotoc Treaty of February 9, 1836, the Chickasaw Indians moved west of the Mississippi River. A post office was established in 1846 at the settlement of Cross Ridge, which was incorporated in 1862 as Booneville. Immigration from Tennessee, Alabama, Georgia, and the Carolinas was encouraged by new roads from the north and east and by the Gulf, Mobile, and Ohio Railroad, which was completed in 1861. In 1870, Tishomingo County was divided and three counties were organized—Prentiss, Tishomingo, and Alcorn. Booneville became the county seat of Prentiss County *(5)*.

The county is bordered on the north by Alcorn County, on the east and northeast by Tishomingo County, on the south by Itawamba and Lee Counties, and on the west by Union and Tippah Counties.

General Geology

Sean T. Duffey, geologist, Natural Resources Conservation Service, prepared this section.

Physiography. Prentiss County contains portions of three physiographic units within the East Gulf Coastal Plain physiographic province. These units include the Tombigbee and Tennessee River Hills, a rugged to rolling surface that generally slopes to the west; the Black Prairie Belt, a low-lying area that has slight to moderate relief and gently rolling hills; and the Pontotoc Hills, a rugged to rolling upland area that has moderate to high relief. Elevations range from about 360 feet above mean sea level in the valleys to nearly 800 feet on the hills.

Stratigraphy. Bedrock formations exposed in the county are of sedimentary marine origin. They are a part of the Gulf series of the Cretaceous system. These formations include, from oldest to youngest, the Eutaw Formation, the Coffee Sand Formation, the Demopolis Formation, and the Ripley Formation *(7)*.

The Eutaw Formation is composed of two units. The lower part consists of cross-bedded glauconitic sand, which contains lamellae of clay and some scattered chert gravel, and thin-bedded sands interbedded with laminated layers of clay and shale. The upper member consists of the Tombigbee Sand, which is a massive, very glauconitic, calcareous, fossiliferous sand member that contains some concretionary layers of sandstone. The lower part of the Eutaw Formation is 110 to 170 feet thick, and the Tombigbee Sand is 75 to 85 feet thick.

The Coffee Sand Formation is composed mainly of sand, silty sand, sandy silt, and some clay beds and shale. It contains several layers of concretionary calcareous sandstone and few bentonite beds. Some parts are fossiliferous. The formation is 240 to 275 feet thick.

The Demopolis Formation is a fossiliferous, impure chalk formation that contains variable amounts of clay, silt, and sand. Generally, it is sandy at its base and becomes increasingly argillaceous toward the top. The thickness varies from 230 feet to 235 feet.

The Ripley Formation is represented by three units—a basal transitional member, the Coon Creek Tongue, and the McNairy Sand member. The basal transitional member consists of fossiliferous, calcareous sandy clay that ranges in thickness from 40 to 45 feet. The Coon Creek Tongue is composed of 165 to 180 feet of sand, marl, and clay beds and some sandstone. The McNairy Sand member is represented by ferruginous sandstone ledges and sand. It ranges from 80 to 90 feet thick.

Overlying these bedrock formations are surficial deposits of Quaternary age, which include alluvium, terrace deposits, and loess material.

Mineral resources. Bentonite is exposed in several places in the Coffee Sand Formation. However, the few workable deposits have already been mined. Other deposits are extremely localized and consist of small lenses, pockets, or nodules of bentonite.

Each of the formations contains some clay, which is closely associated with sand, silt, and other impurities. Several deposits, however, may be suitable for limited ceramic uses.

A large part of the western half of the county is underlain by beds of impure chalk that contain variable amounts of clay, silt, and sand. Generally, the chalk is sandy in the basal parts and is more argillaceous in the upper intervals. Considerable areas of the chalk are covered by surficial deposits. However, numerous exposures appear as bald spots in gullies and on steep valley walls of some of the streams.

Sand is abundant, and it is the main constituent of almost all exposed geologic units. Sand from the lower part of the Eutaw Formation, the middle and upper parts of the Coffee Sand Formation, and the Coon Creek Tongue of the Ripley Formation is used extensively as road material for highways and county roads. The sand ranges from fine grain to coarse grain. If washed, some of the sand, particularly in the upper part of the Coffee Sand Formation and in the Coon Creek Tongue, may be suitable for local use as a fine aggregate in concrete or mortar.

Hydrogeology. The general structural configuration of the bedrock formations is homoclinal, with regional dips averaging 30 feet per mile to the west. The water-bearing strata is recharged by precipitation that falls on outcrop areas. Ground water occurs under water-table conditions in these areas. It moves to the west into confined beds, where it is under artesian pressure *(17)*.

Ground water of suitable quality for most uses underlies most of Prentiss County. Three formations serve as principal aquifers. They are the Ripley Formation, the Coffee Sand Formation, and the Eutaw Formation. Many shallow domestic and farm wells tap the Ripley and Coffee Sand Formations. The water is soft to hard, and it commonly contains less than 200 milligrams per liter of dissolved solids *(17)*. The Eutaw Formation is tapped by many domestic wells. It yields up to 500 gallons per minute to several public water-supply wells.

Water Resources

The sources of water for household use and for livestock generally are adequate in the county. Most of the water for household use comes from several community water systems, which derive the water from

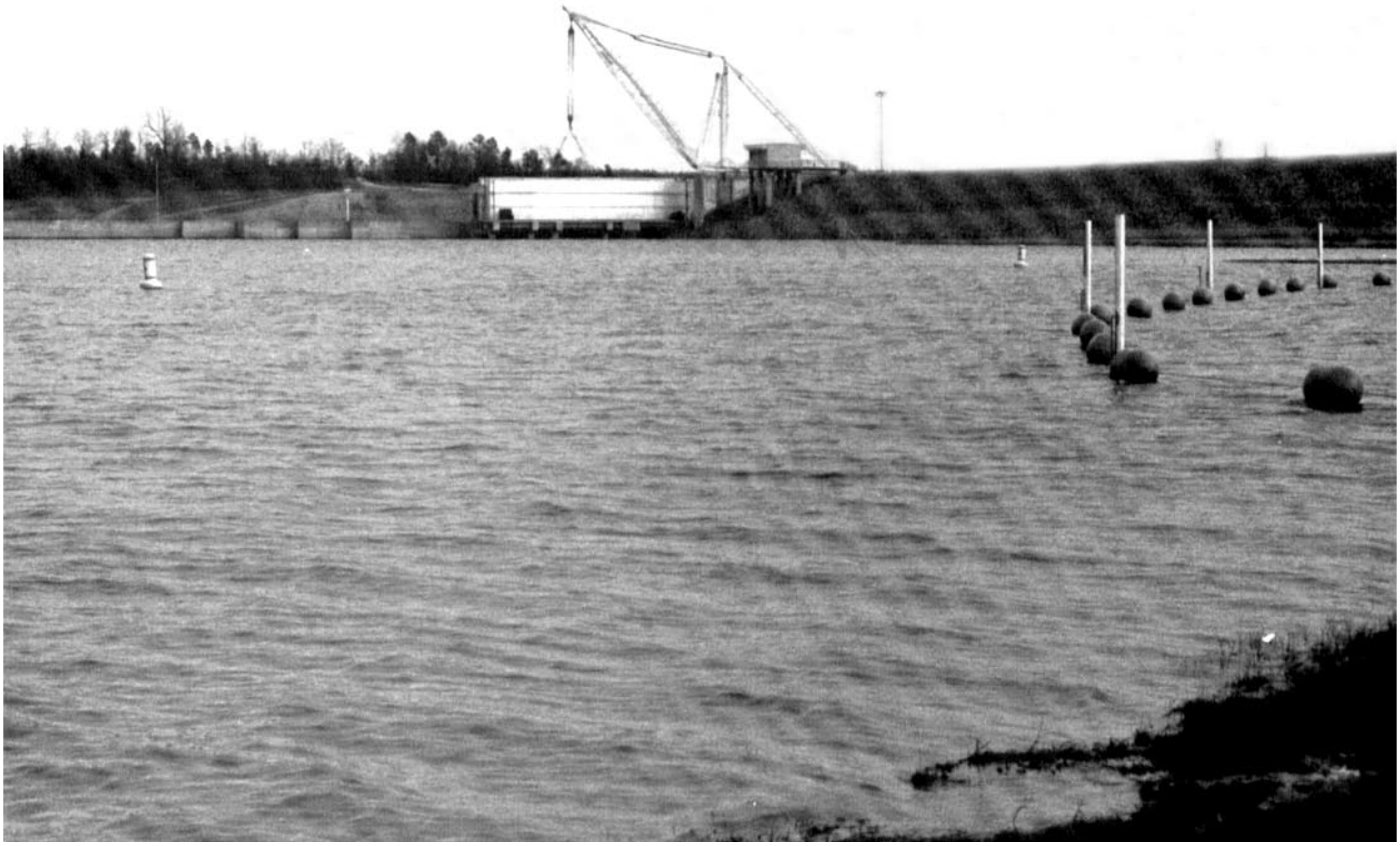

Figure 2.—The Bay Springs Reservoir and Bay Springs Lock and Dam are used for commercial shipping and recreational activities, such as fishing, boating, and swimming.

wells of varying depth. The water used by livestock is mainly from perennial streams, manmade ponds, or springs. In winter, the water flow in most of the intermittent streams is large enough to support livestock. The Bay Springs Reservoir, a large impoundment above the Bay Springs Lock and Dam, is used for commercial shipping, fishing, boating, skiing, and swimming (fig. 2). Lake Mohawk and a few other lakes are also used for recreational activities.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly

pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by two or three kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions

of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Each map unit is rated for *cultivated crops, pasture, woodland, urban uses,* and *wildlife habitat.* Cultivated crops are those grown extensively in the survey area. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, industrial developments, and septic tanks and subsurface waste water disposal systems. Wildlife habitat includes habitat for openland, woodland, and wetland wildlife species.

1. Okeelala-Luverne-Smithdale

Gently sloping to very steep, well drained loamy soils; on highly dissected uplands

This map unit consists of a large area of land that covers the central part of the county. The landscape, which is dissected by a dendritic drainage pattern, is steep and hilly. It has narrow ridgetops that are less than 250 feet wide and long, narrow flood plains that border the perennial streams. In the upper reaches of the drainage system, narrow ridges are separated by intermittent streams and hillsides are dissected by networks of v-shaped drainageways. Slopes range from 3 to 45 percent.

This map unit makes up about 32 percent of the county. It is about 35 percent Okeelala soils, 30 percent Luverne soils, 20 percent Smithdale soils, and 15 percent minor soils.

Okeelala soils are well drained soils on ridges, benches, and hillsides in the uplands. These soils formed in loamy sediments. The surface layer is brown sandy loam. The subsurface layer is yellowish brown loamy sand. The upper part of the subsoil is yellowish red sandy clay loam that has reddish brown mottles. The next part is red sandy clay loam. The lower part is yellowish red sandy clay loam that has strong brown mottles. The underlying material is yellowish red sandy loam that has strong brown mottles.

Luverne soils are well drained soils on ridges and hillsides in the uplands. These soils formed in clayey sediments. The surface layer is dark grayish brown fine sandy loam. The subsurface layer is yellowish brown fine sandy loam. The upper part of the subsoil is yellowish red sandy clay that has red and light olive brown mottles, and the lower part is red sandy clay loam. The upper part of the underlying material is red sandy clay loam that has grayish brown and brown mottles. The next part is yellowish red sandy clay loam. The lower part is yellowish red sandy clay loam that has lamellae of clay, very fine sandy loam, and silt loam.

Smithdale soils are well drained soils that are mainly on hillsides in the uplands. These soils formed in loamy sediments. The surface layer is brown fine sandy loam. The subsurface layer is yellowish brown sandy loam. The upper part of the subsoil is yellowish red sandy clay loam. The next part is yellowish red sandy clay loam that has brownish yellow mottles. The lower part is yellowish red sandy clay loam that has yellowish brown mottles.

The minor soils include Ruston, Savannah, Iuka, Mantachie, and Bibb soils. The well drained Ruston soils are on ridgetops. The moderately well drained Savannah soils are on ridgetops and terraces. The moderately well drained Iuka soils, the somewhat poorly drained Mantachie soils, and the poorly drained Bibb soils are on flood plains.

Most areas of this map unit are used as woodland. A small acreage is used for pasture and crops.

This map unit is generally not suited to row crops,

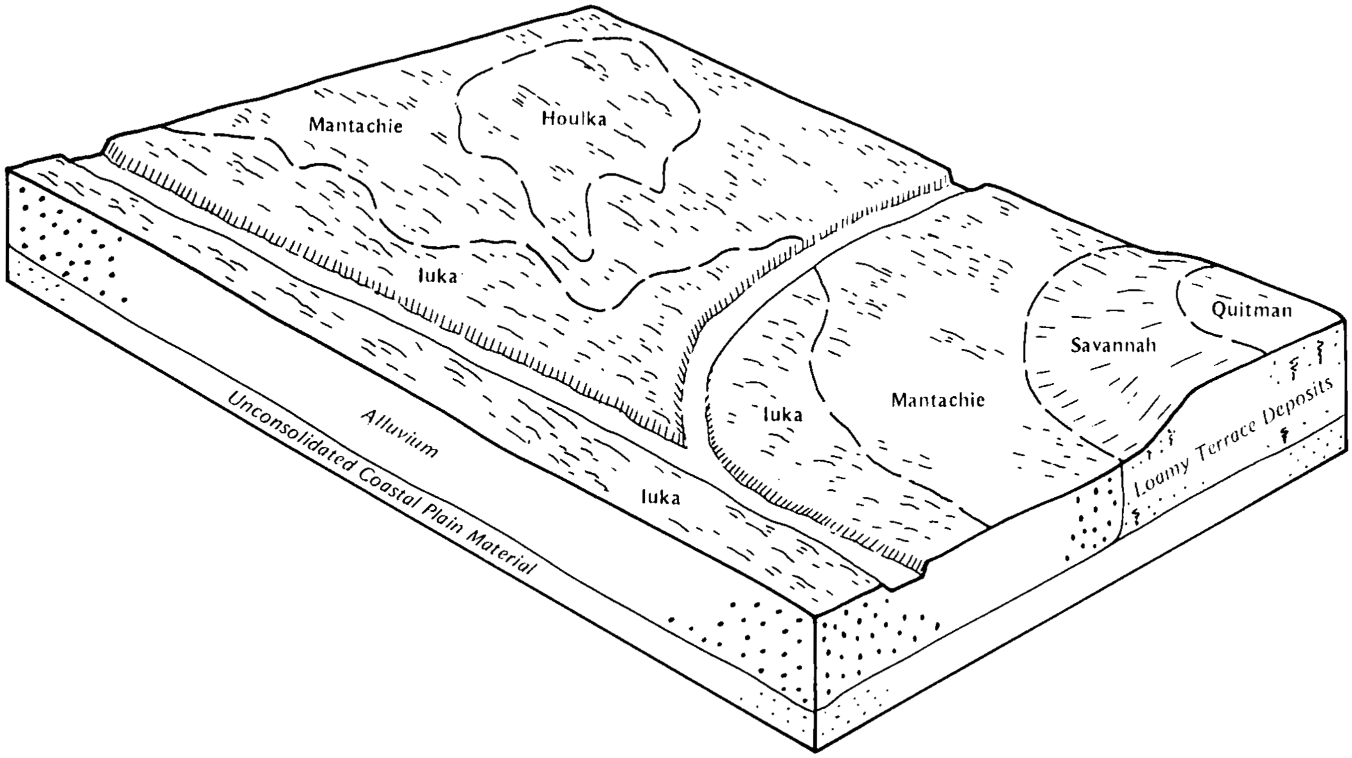

Figure 3.—Typical pattern of soils and parent material in the Mantachie-luka general soil map unit.

truck crops, and small grain because of the severe hazard of erosion and the steep side slopes.

Steep areas of this map unit are poorly suited to pasture and hay. Sloping and strongly sloping areas are suited to these uses.

This map unit is suited to woodland. The slope is a moderate limitation for the use of equipment in areas where the slopes are more than about 15 percent. Plant competition and the hazard of erosion are moderate management concerns.

This map unit has severe limitations for urban uses because of the slope. Luverne soils also are limited because of the shrink-swell potential and low strength.

The potential of this map unit as habitat for openland and woodland wildlife is good. In areas of Okeelala and Smithdale soils where the slopes are more than 15 percent, the potential is only fair. The potential of this map unit as habitat for wetland wildlife is very poor.

2. Smithdale-Luverne-Ruston

Gently sloping to very steep, well drained loamy soils; on highly dissected uplands

This map unit consists of a large area of land that covers the western and eastern parts of the county. The rugged to rolling landscape is composed of steep hillsides below narrow ridgetops. Long, winding ridges are separated by long, narrow flood plains that border perennial streams. In the upper reaches of the drainage system, narrow ridges are separated by intermittent streams and hillsides are dissected by networks of v-shaped drainageways. Slopes range from 2 to 45 percent.

This map unit makes up about 28 percent of the county. It is about 40 percent Smithdale soils, 30 percent Luverne soils, 15 percent Ruston soils, and 15 percent minor soils.

Smithdale soils are well drained soils that are mainly on hillsides in the uplands. These soils formed in loamy sediments. The surface layer is brown fine sandy loam. The subsurface layer is yellowish brown sandy loam. The upper part of the subsoil is yellowish red sandy clay loam. The next part is yellowish red sandy clay loam that has brownish yellow mottles. The lower part is yellowish red sandy clay loam that has yellowish brown mottles.

Luverne soils are well drained soils on ridges, benches, and hillsides in the uplands. These soils formed in clayey sediments. The surface layer is dark grayish brown fine sandy loam. The subsurface layer is

yellowish brown fine sandy loam. The upper part of the subsoil is yellowish red sandy clay that has red and light olive brown mottles. The lower part is red sandy clay loam. The upper part of the underlying material is red sandy clay loam that has grayish brown and brown mottles. The next part is yellowish red sandy clay loam. The lower part is yellowish red sandy clay loam that has lamellae of clay, very fine sandy loam, and silt loam.

Ruston soils are well drained soils on ridgetops in the uplands. These soils formed in loamy sediments. The surface layer is dark brown fine sandy loam. The subsurface layer is light yellowish brown fine sandy loam. The upper part of the subsoil is yellowish red sandy clay loam. The next layer is yellowish red sandy loam. The following layer is mottled red and light yellowish brown sandy loam that has pockets of loamy sand. The lower part is red sandy clay loam that has light yellowish brown mottles.

The minor soils include Tippah, Savannah, Iuka, Mantachie, Bibb, and Kinston soils. The moderately well drained Tippah soils are in the uplands. The moderately well drained Savannah soils are in the uplands and on terraces. The moderately well drained Iuka soils, the somewhat poorly drained Mantachie soils, and the poorly drained Bibb and Kinston soils are on flood plains.

Most areas of this map unit are used as woodland. A small acreage is used for pasture and crops.

This map unit is generally not suited to row crops and small grain because of the severe hazard of erosion on the ridgetops and steep side slopes. Smithdale and Luverne soils in steep areas are poorly suited to pasture.

Sloping and strongly sloping areas of Luverne soils are moderately suited to grasses and legumes for hay and pasture. The suitability is good for grasses and legumes for hay and pasture in gently sloping and sloping areas of Ruston soils.

The suitability of Ruston soils for use as woodland is good. These soils have few limitations for woodland management. Luverne and Smithdale soils are moderately suited to woodland. The slope is a moderate limitation for the use of equipment in areas where the slopes are more than about 15 percent. The hazard of erosion is a moderate concern in these steeper areas.

Smithdale soils in this map unit have severe limitations for urban uses because of the slope. Luverne soils have severe limitations because of the slope, the high content of clay, and low strength. Ruston soils have moderate limitations because of low strength and the slope.

The potential of this map unit as habitat for openland and woodland wildlife is good. In areas of Smithdale soils where the slopes are more than 15 percent, the potential is only fair. The potential of this map unit as habitat for wetland wildlife is very poor.

3. Mantachie-Iuka

Nearly level, somewhat poorly drained and moderately well drained loamy soils; on broad to narrow flood plains

This map unit is characterized by very low relief. It is on nearly level flood plains along creeks in many parts of the county (fig. 3). Depressions and shallow drainageways are common. Some low areas are wet for extended periods. Most areas are cultivated. Slopes range from 0 to 2 percent.

This map unit makes up about 12 percent of the county. It is about 50 percent Mantachie soils, 25 percent Iuka soils, and 25 percent minor soils.

Mantachie soils are somewhat poorly drained soils on flood plains. These soils formed in loamy alluvial sediments. The surface layer is brown fine sandy loam that has strong brown mottles in the lower part. The upper part of the subsoil is brown silt loam that has light brownish gray and yellowish brown mottles. The next part is light brownish gray loam that has strong brown mottles. The lower part is light brownish gray loam that has yellowish brown and strong brown mottles. The underlying material is light brownish gray loam that has strong brown mottles.

Iuka soils are moderately well drained soils on flood plains. These soils formed in stratified, loamy and sandy alluvial sediments. The surface layer is brown fine sandy loam. The upper part of the underlying material is brown fine sandy loam that has a few thin pale brown strata of loamy sand. The next part is yellowish brown sandy loam that has a few grayish brown mottles and thin strata of loamy sand. The following layer is mottled light gray and strong brown loam that has thin strata of loamy fine sand and clay loam. The lower part is mottled light gray and strong brown clay loam.

The minor soils include the somewhat poorly drained Houlka soils and the poorly drained Bibb, Kinston, and Rosebloom soils. All of these soils are on flood plains.

Most of the acreage in this map unit is used for row crops or pasture. The rest is used as woodland.

This map unit is suited to row crops, small grain, and truck crops. The seasonal wetness and flooding are management concerns in areas of the Mantachie soils unless a drainage system has been installed. Iuka soils on the flood plains of smaller tributary streams are better suited to a wide variety of crops.

This map unit is well suited to pasture and woodland.

This map unit is generally not suited to urban uses because of the wetness and flooding.

The potential of this map unit as habitat for openland

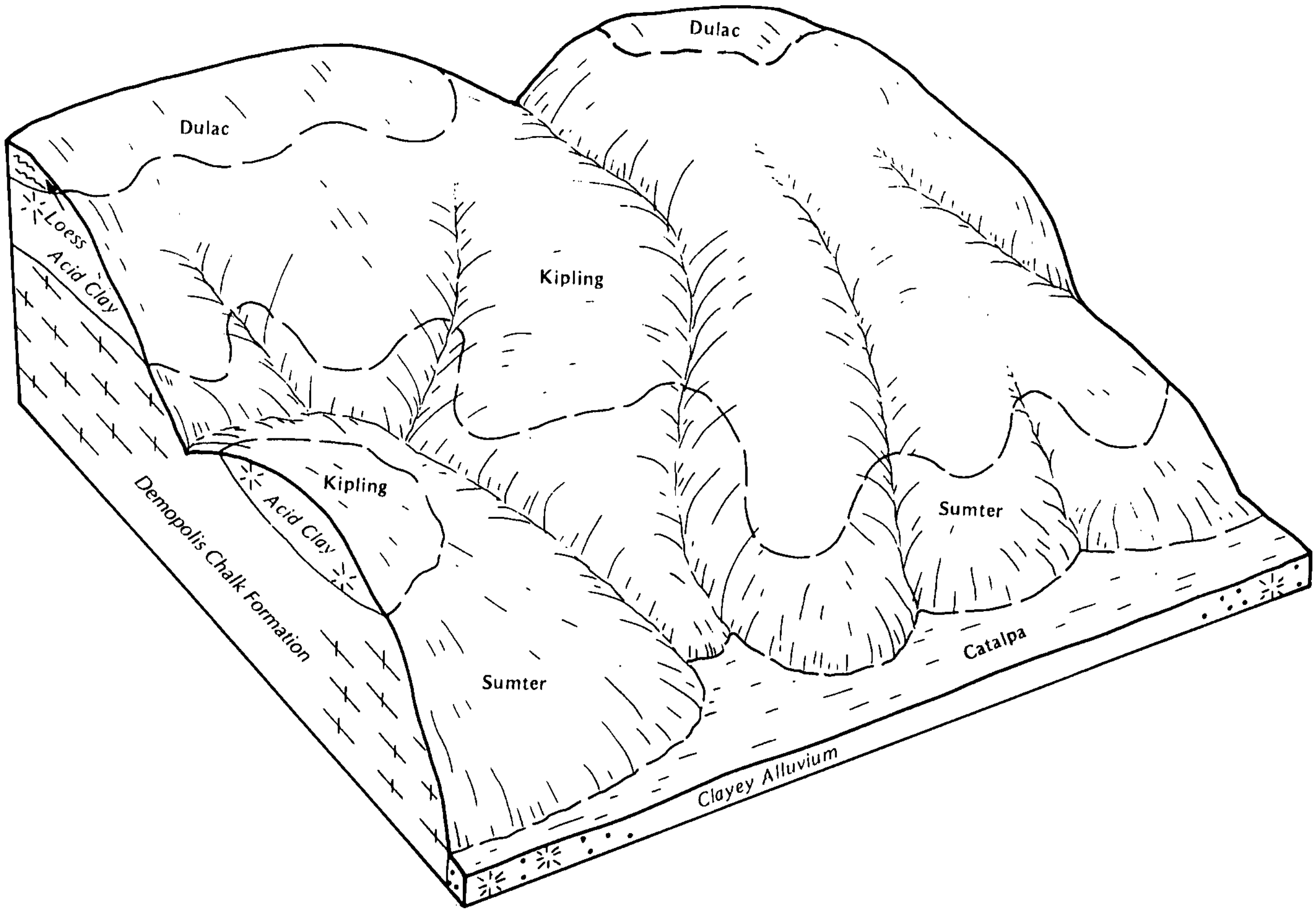

Figure 4.—Typical pattern of soils and parent material in the Kipling-Sumter general soil map unit.

and woodland wildlife is good. The potential as habitat for wetland wildlife is fair in areas of Mantachie soils and poor in areas of Iuka soils.

4. Kipling-Sumter

Gently sloping to very steep, somewhat poorly drained and well drained clayey and loamy soils; on hillsides and broad ridges

This map unit consists of an area of land that covers a large part of western Prentiss County. The landscape consists of broad, undulating, and rolling uplands that have slight to moderate relief and have broad ridgetops (fig. 4). The hillsides are dissected by many short drainageways that coalesce to form intermittent streams. Perennial streams are bordered by narrow flood plains. Some eroded areas along the steeper valley walls have bald areas with outcrops of chalk. Slopes range from 2 to 40 percent.

This map unit makes up about 10 percent of the county. It is about 65 percent Kipling soils, 25 percent Sumter soils, and 10 percent minor soils.

Kipling soils are somewhat poorly drained soils on side slopes and ridgecrests in the uplands. These soils formed in acid clay and the underlying marly clay and chalk. The surface layer is dark brown silty clay loam that is mixed with a large amount of mottled pale brown and red subsoil material. The upper part of the subsoil is mottled pale brown, red, and light brownish gray clay. The next layer is mottled red and light brownish gray clay. The following layer is mottled light brownish gray, yellowish red, and yellowish brown clay. Below this is mottled strong brown and light brownish gray clay. The following layer is light gray clay that has yellowish brown mottles. The lower part of the subsoil is mottled light brownish gray, yellowish brown, and brown clay. Many calcium carbonate concretions are in the lower part of the subsoil.

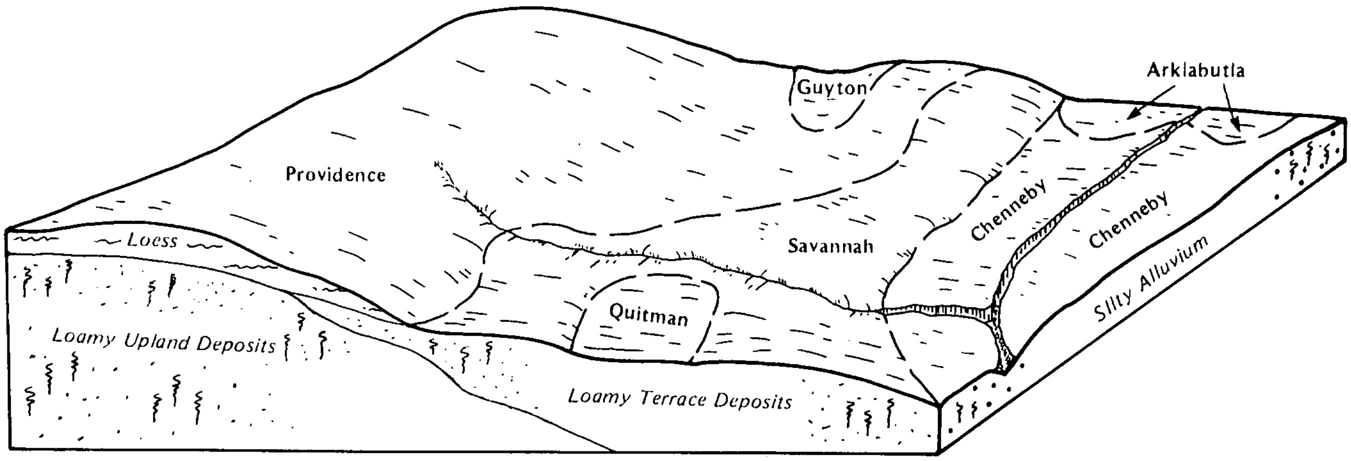

Figure 5.—Typical pattern of soils and parent material in the Providence-Savannah-Chenneby general soil map unit.

Sumter soils are well drained soils that are mainly on hillsides and in more dissected areas on ridgetops in the uplands. These soils formed in marly clay and the underlying weathered chalk. The surface layer is grayish brown silty clay that is mixed with many pockets of light brownish gray subsoil material. The upper part of the subsoil is yellowish brown clay that has light yellowish brown streaks. The lower part of the subsoil is light olive brown clay that has yellowish brown mottles and many calcium carbonate concretions. The underlying material is light brownish gray chalk.

The minor soils include the moderately well drained Catalpa soils on flood plains and the moderately well drained Dulac soils on some of the broader ridgetops.

Most areas of this map unit are used as cropland or pasture. A small acreage was abandoned and has reverted to woodland.

This map unit is poorly suited to row crops because of the severe hazard of erosion on the ridgetops and steep side slopes. Steep areas of Kipling and Sumter soils are poorly suited to pasture.

Sloping and strongly sloping areas of Kipling soils are suited to grasses and legumes for hay and pasture. Sumter soils are poorly suited to grasses and legumes even on the gentle slopes.

The suitability of Kipling soils for use as woodland is good. Kipling soils have moderate limitations for woodland management because of the hazard of erosion, the seedling mortality rate, and the restricted use of equipment during wet seasons because of poor trafficability. Sumter soils are poorly suited to woodland in areas that have slopes of more than 15 percent because the use of equipment is limited by the slope.

Kipling soils have severe limitations for urban uses because of the slope, the wetness, and the high shrink-swell potential. Sumter soils are severely limited because of the high shrink-swell potential, the slope, slow permeability, low strength, and the depth to chalk bedrock.

The potential as habitat for openland and woodland wildlife for Kipling soils is good and for Sumter soils is fair. The potential of this map unit as habitat for wetland wildlife is very poor.

5. Providence-Savannah-Chenneby

Nearly level to strongly sloping, moderately well drained silty and loamy soils that have a fragipan and are in the uplands and on stream terraces and somewhat poorly drained silty soils that do not have a fragipan and are on flood plains

This map unit is in the northwestern part of the county. The landscape consists of a gently rolling upland area that has low relief (fig. 5). Most of the slopes are nearly level to strongly sloping. The map unit is dissected by short, branching drainageways and narrow flood plains that border the perennial streams. Slopes range from 0 to 12 percent.

This map unit makes up about 10 percent of the county. It is about 45 percent Providence soils, 25 percent Savannah soils, 15 percent Chenneby soils, and 15 percent minor soils.

Providence soils are moderately well drained soils on ridgetops in the uplands and on terraces. These soils formed in a thin mantle of loess and the underlying loamy Coastal Plain sediments. The surface layer is dark yellowish brown silt loam that has a few pockets of

strong brown material from the horizon below. The upper part of the subsoil is strong brown silt loam. The next part is a firm, compact, and brittle fragipan that is yellowish brown silt loam and has light yellowish brown and light brownish gray mottles. Below this, the fragipan is mottled, strong brown and light brownish gray silt loam. Below the fragipan, the subsoil is yellowish red loam that has yellowish brown mottles. The lower part of the subsoil is red clay loam that has yellowish brown mottles.

Savannah soils are moderately well drained soils on ridgetops in the uplands and on terraces. These soils formed in loamy sediments. The surface layer is dark yellowish brown fine sandy loam. The upper part of the subsoil is yellowish brown loam. The next layer is yellowish brown sandy clay loam that has pale brown mottles. The middle and lower parts of the subsoil are a firm, compact, and brittle fragipan. The upper part of the fragipan is yellowish brown sandy loam that has light brownish gray and dark yellowish brown mottles. The next layer is yellowish brown sandy loam that has light brownish gray mottles. Below this is yellowish brown sandy loam that has light brownish gray and brown mottles. The lower part is yellowish brown sandy loam that has light brownish gray and brown mottles.

Chenneby soils are somewhat poorly drained soils on flood plains. These soils formed in silty alluvium. The surface layer is dark brown silt loam. The upper part of the subsoil is brown silt loam that has pale brown mottles. The next part is brown silty clay loam that has strong brown and light brownish gray mottles. The lower part is light brownish gray silty clay loam that has strong brown mottles. The underlying material is gray silty clay loam that has yellowish brown mottles.

The minor soils include the somewhat poorly drained Arkabutla soils on flood plains, the poorly drained Guyton soils in depressions on terraces, and the somewhat poorly drained Quitman soils on terraces.

This map unit is used mostly for cultivated crops. Some areas are used as pasture, and a small acreage is used as woodland.

Nearly level and gently sloping areas of this map unit are well suited to most of the row crops commonly grown in the county. Strongly sloping areas of Providence and Savannah soils on side slopes are poorly suited to row crops because the slope causes a severe hazard of erosion.

The suitability of this map unit for pasture and woodland is good.

Providence and Savannah soils are suited to urban uses, but the low strength and seasonal wetness are management concerns. Chenneby soils are generally not suited to urban uses because of the flooding and seasonal wetness.

The potential of this map unit as habitat for openland and woodland wildlife is good. Providence and Savannah soils have very poor potential as habitat for wetland wildlife, and Chenneby soils have fair potential for this use.

6. Leeper-Marietta-Catalpa

Nearly level, somewhat poorly drained and moderately well drained loamy and clayey soils; on flood plains

This map unit consists of an area of land in the western and southwestern parts of Prentiss County. The landscape has very low relief. It is on nearly level, broad flood plains (fig. 6). The flood plains are dissected by perennial and intermittent creeks and manmade channels. Slopes range from 0 to 2 percent.

This map unit makes up about 5 percent of the county. It is about 40 percent Leeper soils, 40 percent Marietta soils, 15 percent Catalpa soils, and 5 percent minor soils.

Leeper soils are somewhat poorly drained soils on flood plains. These soils formed in clayey alluvium. The surface layer is brown silty clay. The upper part of the subsoil is dark grayish brown silty clay that has strong brown mottles. The next part is dark grayish brown silty clay that has strong brown and grayish brown mottles. The lower part of the subsoil is mottled gray and strong brown clay.

Marietta soils are moderately well drained soils on flood plains. These soils formed in loamy alluvium. The surface layer is dark yellowish brown fine sandy loam. The upper part of the subsoil is dark yellowish brown loam. The next layer is brown sandy clay loam that has light brownish gray mottles. The following layer is brown sandy clay loam that has light brownish gray mottles. The lower part of the subsoil is mottled light brownish gray and dark brown sandy clay loam. The underlying material is light brownish gray sandy clay loam that has dark brown mottles.

Catalpa soils are somewhat poorly drained soils on flood plains. These soils formed in clayey alluvium. The surface layer is very dark grayish brown silty clay. The subsurface layer is very dark grayish brown silty clay. The upper part of the subsoil is dark grayish brown silty clay that has light olive brown mottles. The next part is dark grayish brown clay that has light olive brown mottles. The lower part is mottled olive brown and dark grayish brown clay. The underlying material is mottled dark grayish brown, yellowish brown, and olive brown clay.

The minor soils include the somewhat poorly drained

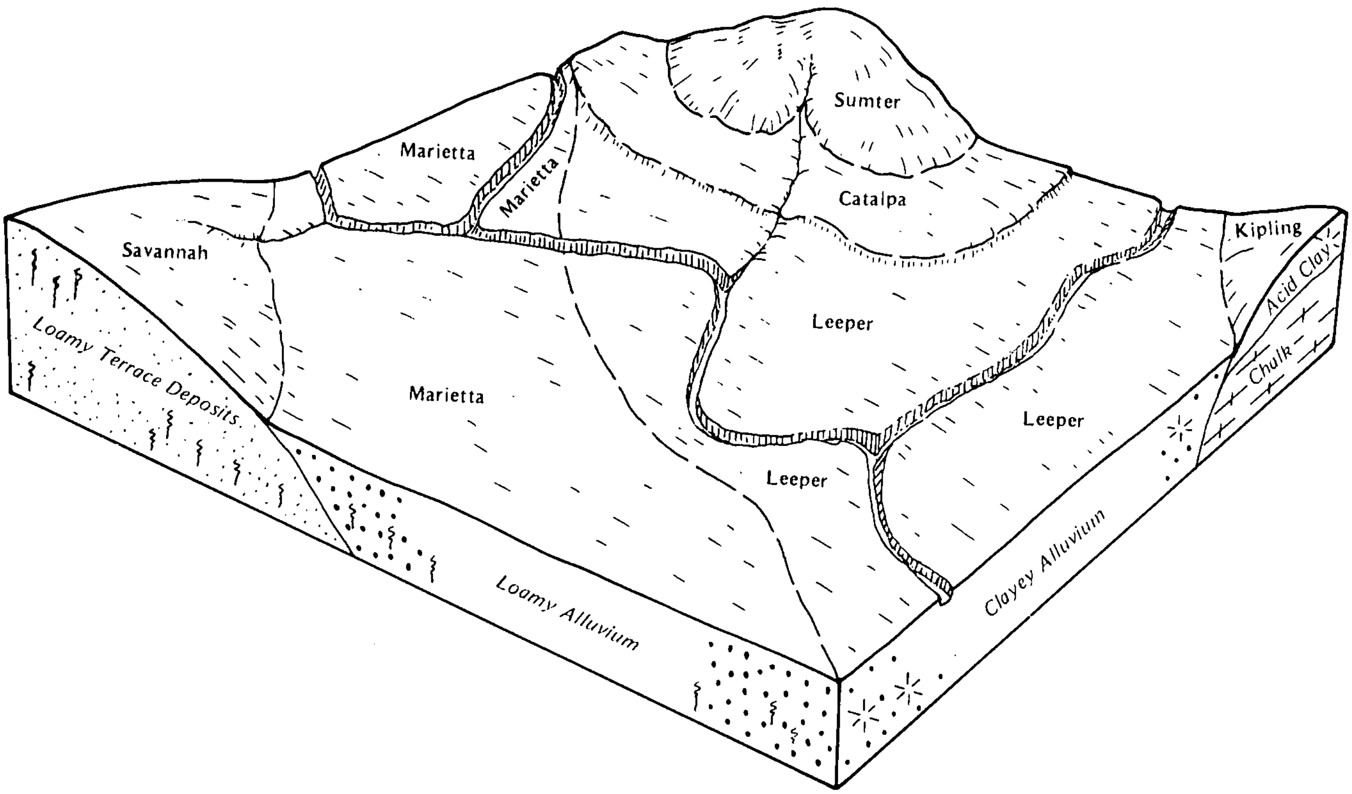

Figure 6.—Typical pattern of soils and parent material in the Leeper-Marietta-Catalpa general soil map unit.

Kipling soils on hillsides in the uplands, the moderately well drained Savannah soils on terraces, and the well drained Sumter soils on hillsides in the uplands.

Most areas of this map unit are used as cropland. All of the soils in this map unit are well suited to crops.

The suitability of this map unit as pasture or woodland is good.

This map unit is generally not suited to urban uses because of the flooding and seasonal wetness. The high shrink-swell potential is a management concern in areas of Leeper and Catalpa soils.

The potential as habitat for openland wildlife habitat is good for Leeper and Marietta soils and is fair for Catalpa soils. The potential of this map unit as habitat for woodland wildlife is good. The potential as habitat for wetland wildlife is fair for Leeper and Catalpa soils and is poor for Marietta soils.

7. Savannah

Nearly level to strongly sloping, moderately well drained loamy soils that have a fragipan; on terraces and uplands

This map unit is on terraces and interfluves along the larger creeks in the county. The landscape is gently undulating to rolling and has short terrace escarpments above the flood plains. Slopes range from 0 to 12 percent.

This map unit makes up about 2 percent of the county. It is about 75 percent Savannah soils and about 25 percent minor soils.

Savannah soils are moderately well drained soils in the uplands and on terraces. These soils formed in loamy sediments. The surface layer is dark yellowish brown fine sandy loam. The upper part of the subsoil is yellowish brown loam. The next layer is yellowish brown sandy clay loam that has yellowish brown and pale brown mottles. The middle and lower parts of the subsoil are a firm, compact, and brittle fragipan. The upper part is yellowish brown sandy loam that has light brownish gray and dark yellowish brown mottles. The next layer, which is also a fragipan, is yellowish brown sandy loam that has light brownish gray and brown mottles. The lower part of the subsoil is yellowish brown sandy loam that has light brownish gray and brown mottles.

Minor soils are Iuka, Quitman, and Myatt soils. The moderately well drained Iuka soils are on nearly level flood plains. The somewhat poorly drained Quitman soils and poorly drained Myatt soils are on terraces.

Most areas of this map unit are used as pasture or cropland. A small acreage is used as woodland.

Nearly level and gently sloping areas of this map unit are well suited to row crops. Sloping and strongly sloping areas are poorly suited to row crops because of increased runoff rate and the hazard of erosion.

The suitability of this map unit as pasture or woodland is good.

This map unit is suited to urban uses, but the seasonal wetness and low strength are management concerns.

The potential of this map unit as habitat for openland and woodland wildlife habitat is good. The potential as habitat for wetland wildlife is very poor.

8. Bibb-Iuka

Nearly level, poorly drained and moderately well drained loamy soils; on broad flood plains

This map unit consists of an area of land in the southeastern corner of the county. The landscape consists of nearly level flood plains that are dissected by drainageways and small creeks. Slopes range from 0 to 2 percent.

This map unit makes up about 1 percent of the county. It is about 50 percent Bibb soils, 25 percent Iuka soils, and 25 percent minor soils.

Bibb soils are poorly drained soils on flood plains. These soils formed in stratified alluvium. The surface layer is dark brown sandy loam. The subsurface layer is light brownish gray loam that has dark yellowish brown and strong brown mottles. The upper part of the underlying material is light brownish gray fine sandy loam that has yellowish brown mottles. The lower part is light gray loamy fine sand that has strong brown mottles.

Iuka soils are moderately well drained soils on flood plains. These soils formed in loamy alluvium. The surface layer is brown sandy loam. The upper part of the underlying material is yellowish brown sandy loam. The next part is yellowish brown sandy loam that has light brownish gray mottles. The following part is light brownish gray sandy loam that has yellowish brown mottles.

The minor soils include the moderately well drained Kirkville soils, the somewhat poorly drained Mantachie soils, and the poorly drained Kinston soils. All of these soils are on flood plains.

Most of the acreage in this map unit supports hardwood forests. The rest is used as pasture or is cultivated.

This map unit is well suited to use as woodland.

The suitability for row crops and pasture is fair in areas of Iuka soils and is poor in areas of Bibb soils because of the wetness and flooding.

This map unit is generally unsuited to urban uses because of the wetness and flooding.

The potential of this map unit as habitat for openland, woodland, and wetland wildlife is fair.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under the heading "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Savannah fine sandy loam, 2 to 5 percent slopes, eroded, is a phase of the Savannah series.

Some map units are made up of two or more major soils. These map units are called soil complexes or undifferentiated groups.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Pits-Udorthents complex is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in a mapped area are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Okeelala, Luverne, and Smithdale sandy loams, 5 to 45 percent slopes, is an undifferentiated group in this survey area.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. The Pits part of the Pits-Udorthents complex is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

Ar—Arkabutla silt loam, occasionally flooded. This nearly level, somewhat poorly drained soil is on flood plains. It formed in silty alluvium. Individual areas range from 5 to 20 acres in size. Most areas are subject to flooding, especially during winter and early spring. In areas where channels have been enlarged, deepened, and straightened, the duration of flooding is mainly for a few hours. However, in areas along natural, winding channels and in some low areas, the duration of flooding is as long as a few days. Individual areas range from 10 to 30 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 7 inches, dark yellowish brown silt loam

Subsoil:
- 7 to 15 inches, brown silt loam that has dark grayish brown and strong brown mottles
- 15 to 46 inches, light brownish gray silt loam that has yellowish brown and strong brown mottles
- 46 to 61 inches, light brownish gray silty clay loam that has strong brown and yellowish brown mottles

Included in mapping are small areas of Mantachie soils and Rosebloom soils on flood plains. The somewhat poorly drained Mantachie soils are loamy. They are in landscape positions similar to those of the Arkabutla soil. The poorly drained Rosebloom soils are in depressions and drainageways. Also included are some areas of soils that are along channels and have an overwash of loamy overbank deposits about 10 to 20 inches thick and some areas of soils that are in drainageways and are frequently flooded for brief to long periods. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Arkabutla soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate
Available water capacity: Very high
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 1.0 to 1.5 feet in winter and early spring
Flooding: Occasional, for very brief to brief periods in late winter and early spring
Root zone: Extends to a depth of 60 inches or more; somewhat restricted by a seasonal water table at a depth of 1.0 to 1.5 feet in winter and early spring
Shrink-swell potential: Low
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content, but it tends to crust and pack after hard rains.

Most of the acreage of this Arkabutla soil is used for row crops or pasture. A small acreage is used as woodland.

This soil is well suited to row crops, small grain, and truck crops. Seasonal wetness is the main limitation. Proper row arrangement and surface field ditches can remove excess surface water. Returning crop residue to the soil improves tilth. Seedbed preparation and cultivation are sometimes delayed in spring because of wetness and flooding. Most of the flooding occurs in winter and early spring before crops are planted, but flooding can cause moderate damage to crops in low, unprotected areas after heavy rains in summer.

This soil is well suited to pasture and hay crops that tolerate some wetness. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Restricting use during wet periods minimizes surface compaction. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture and soil in good condition. Flooding causes some damage to plants in the lower areas, and wetness can delay the growth of plants in spring.

This soil is well suited to woodland. Bottom-land hardwoods and pines that are tolerant of wetness and flooding are well suited, and these are the dominant trees in wooded areas. The trees preferred for planting include cherrybark oak, eastern cottonwood, sweetgum, American sycamore, yellow-poplar, and loblolly pine. The seasonal wetness is a moderate limitation for the use of equipment. Limiting the use of heavy equipment to drier seasons helps to overcome the problems caused by wetness, minimizes soil compaction, and helps to prevent the formation of ruts. If pine trees are planted, plant competition is a severe management concern. Proper site preparation is needed to control undesirable plants, but the benefits of the site preparation do not extend beyond one growing season. Applying approved herbicides, increasing the planting rate, and mechanically controlling the competing vegetation help seedlings become established and increase the rate of growth. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has fair potential as habitat for wetland wildlife.

The flooding and the wetness are severe limitations on sites for residential and small commercial buildings. The flooding and low strength are the major limitations on sites for local roads. Special designs and proper engineering techniques help to overcome some of the limitations. Flood-control measures generally are not practical because of the high cost. The flooding and wetness are severe limitations affecting septic tanks and subsurface waste-water disposal fields. Alternative sites can be selected.

This Arkabutla soil is in capability subclass IIw and in woodland suitability group 4W.

Bb—Bibb sandy loam, frequently flooded. This nearly level, poorly drained soil formed in stratified, loamy and sandy alluvium on narrow flood plains. It is subject to flooding, generally from December through May during most years. However, flooding can occur at

any time after heavy rains. The flooding lasts for several days, but some low areas are inundated for longer periods. Individual areas range from 5 to 50 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 15 inches, dark brown sandy loam in the upper part and light brownish gray loam that has dark yellowish brown mottles in the lower part

Underlying material:
15 to 30 inches, light brownish gray fine sandy loam that has yellowish brown mottles
30 to 60 inches, light gray loamy fine sand that has strong brown mottles

Included in mapping are small areas of Iuka, Kinston, and Kirkville soils on flood plains. The moderately well drained Iuka and Kirkville soils are generally on slightly higher parts of the flood plain, closer to channels than the Bibb soil. The poorly drained Kinston soils are in slightly depressional areas. Also included are areas of soils that have sandy overbank deposits mainly less than 20 inches thick; some areas of soils that are on convex parts of the flood plain and are subject to occasional flooding; and some areas of soils that are in drainageways and sloughs and are flooded for long or very long periods. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Bibb soil—

Soil reaction: Very strongly or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate
Available water capacity: Moderate
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 0.5 to 1.0 foot in winter and spring
Flooding: Frequent, mainly for brief periods during winter and spring. Some low areas are inundated for longer periods.
Root zone: Deep; somewhat restricted for plants that are not tolerant of wetness by a seasonal water table in spring
Shrink-swell potential: Low
Tilth: Good

Most areas of this Bibb soil are used as woodland. Some areas that are less subject to flooding are used for pasture and hay. A small acreage is used for crops.

This soil is poorly suited to row crops, truck crops, and small grain because of wetness and frequent flooding. These limitations can be partially overcome by installing a specially planned drainage and levee system. Regulations that apply to drainage systems should be checked before initiating drainage work.

This soil is suited to pasture and hay crops that are tolerant of wetness. The wetness limits the choice of pasture plants, restricts the period of cutting or grazing, and decreases the rate of plant survival. Drainage ditches help to remove surface water during the growing season, but plant stands can be damaged or destroyed by flooding early in the growing season. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture and soil in good condition.

This soil is well suited to woodland. Bottom-land hardwoods and some swamp hardwoods in the lower areas are the dominant trees. The trees preferred for planting include green ash, loblolly pine, sweetgum, water oak, and willow oak. The flooding and wetness are the main management concerns affecting forest management. Only those trees that can tolerate seasonal wetness should be planted. The seedling mortality rate and plant competition are severe management concerns. The seasonal wetness and flooding severely limit the use of equipment. Restricting the use of equipment to drier periods, mainly during late summer and fall, helps to overcome the limitations. Planting pine trees on bedded rows reduces the seedling mortality rate by lowering the effective depth of the high water table. The survival of pine seedlings is increased by increasing the planting rate and controlling competition from undesirable plants. Plant competition can be controlled by using mechanical cultivation, cutting weeds and hardwood sprouts, girdling unwanted trees, and applying an approved herbicide. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has fair potential as habitat for openland and woodland wildlife. It has good potential as habitat for wetland wildlife.

This soil is not suited as a site for residential or small commercial buildings or for septic tanks or subsurface waste-water disposal systems because of the wetness and frequent flooding. Flood-control measures generally are not practical because of the high cost. The wetness and flooding are severe limitations on sites for local roads. Special designs and proper construction help to overcome the limitations. Alternative sites can be selected for septic tanks and subsurface waste-water disposal systems.

This Bibb soil is in capability subclass Vw and in woodland suitability group 11W.

Figure 7.—The Tennessee-Tombigbee Waterway flows through an area of Bibb and Iuka sandy loams, frequently flooded, in the southeastern part of Prentiss County.

Bl—Bibb and Iuka sandy loams, frequently flooded. This map unit consists of the poorly drained Bibb soil and the moderately well drained Iuka soil. These nearly level soils formed in stratified, loamy alluvial deposits on flood plains. They are in drainageways and on flood plains along tributary streams of the Tennessee-Tombigbee Waterway (fig. 7) in the southeastern part of the county. Slopes range from 0 to 2 percent.

Because the present and predicted major land use is woodland, these soils were mapped together. Onsite investigation is required to identify the location of each component. Individual areas range from about 50 to more than 1,000 acres in size. The poorly drained Bibb soil makes up about 50 percent of the unit, the moderately well drained Iuka soil makes up about 30 percent, and included soils make up about 20 percent. The Bibb soil is mainly in lower areas on the flood plain.

The Iuka soil is mainly on low rises or in mildly convex areas on the flood plain.

This map unit is subject to flooding, generally from December to May, although flooding can occur during any time of the year. In the lower areas, the flooding lasts from a few days to a month. In higher areas on the flood plain, the flooding lasts from a few hours to a few days.

The typical sequence, depth, and composition of the layers of the Bibb soil are as follows—

Surface layer:
0 to 15 inches, dark brown sandy loam in the upper part and light brownish gray loam that has dark yellowish brown mottles in the lower part

Underlying material:
15 to 30 inches, light brownish gray fine sandy loam that has yellowish brown mottles
30 to 60 inches, light gray loamy fine sand that has strong brown mottles

The typical sequence, depth, and composition of the layers of the Iuka soil are as follows—

Surface layer:
0 to 5 inches, brown sandy loam

Underlying material:
5 to 16 inches, yellowish brown sandy loam
16 to 30 inches, yellowish brown sandy loam that has light brownish gray mottles
30 to 60 inches, light brownish gray sandy loam that has yellowish brown mottles

Included in mapping are small areas of the moderately well drained Kirkville soils, the somewhat poorly drained Mantachie soils, and some areas of Bibb soils and similar soils that are in depressions and sloughs where water ponds for very long periods. Also included are areas of soils that are along channels and have sandy overbank deposits a few inches to about 20 inches in thickness. The included soils make up about 20 percent of the map unit.

Important properties of Bibb and Iuka soils—

Soil reaction: Very strongly acid or strongly acid, except in the surface layer of areas that have been limed
Permeability: Moderate
Available water capacity: Moderate
Surface runoff: Very slow to slow
Erosion hazard: Slight
Seasonal high water table: Bibb—at a depth of 0.5 to 1.0 foot; Iuka—at a depth of 1.0 to 3.0 feet
Flooding: Bibb—frequent, mainly for brief periods during winter and spring, although some low areas are flooded for long periods; Iuka—frequent for very brief to brief periods
Root zone: Deep; somewhat restricted for plants that are not tolerant of wetness by a seasonal high water table during winter and spring
Shrink-swell potential: Low
Tilth: Good

Most of the acreage in this map unit is used as woodland. A small acreage is used as pasture.

The Bibb soil is poorly suited to row crops, truck crops, and small grain because of wetness and frequent flooding. These limitations can be partially overcome by installing a specially planned drainage and levee system. Regulations that apply to drainage systems should be checked before initiating drainage work. Areas of the Iuka soil that are subject to flooding for brief periods are suited to row crops and pasture. Field ditches help to remove the excess surface water.

This map unit is moderately suited to pasture grasses that are tolerant of wetness. Drainage ditches help to remove surface water during the growing season, especially in areas of the Bibb soil, but plant stands can be damaged or destroyed by flooding early in the growing season. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This map unit is well suited to woodland. Bottom-land hardwoods and some swamp hardwoods in the wet, low areas of the Bibb soil are the dominant trees. The trees preferred for planting include green ash, loblolly pine, eastern cottonwood, and sweetgum. Flooding and wetness are the main management concerns affecting forest management. The use of equipment is severely limited by seasonal wetness in areas of the Bibb soil and moderately limited in areas of the Iuka soil. Restricting logging activities to seasonal dry periods, such as late summer and fall, helps to overcome this limitation. Logging activities performed on wet soils cause compaction and rutting, which can reduce productivity. If pine trees are planted, plant competition is a severe management concern. The seedling mortality rate is a severe management concern in areas of the Bibb soil and a moderate concern in areas of the Iuka soil. Proper site preparation, mechanical cultivation, applications of an approved herbicide, and an increased planting rate help to overcome the plant competition and reduce the seedling mortality rate. In wetter areas of the Bibb soil, planting pine trees on bedded rows lowers the effective depth of the seasonal high water table and increases the rate of seedling survival. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Hardwood timber stands can be improved by leaving

preferred trees for seed production and removing unwanted trees.

This map unit has fair potential as habitat for openland wildlife. The Bibb soil has fair potential as habitat for woodland wildlife, and the Iuka soil has good potential. The Bibb soil has good potential as habitat for wetland wildlife, and the Iuka soil has poor potential.

This map unit is not suited as a site for residential or small commercial buildings or for septic tanks or subsurface waste-water disposal systems because of the wetness and frequent flooding. Special designs and construction generally are not practical for overcoming these limitations. Flood-control measures generally are not practical because of the high cost. Alternative sites for septic tanks and subsurface waste-water disposal systems can be selected.

The Bibb soil is in capability subclass Vw and in woodland suitability group 11W. The Iuka soil is in capability subclass Vw and in woodland suitability group 9W.

Ca—Catalpa silty clay, occasionally flooded. This nearly level, somewhat poorly drained soil formed on flood plains in clayey alluvium. Most areas are subject to flooding following heavy, prolonged rains during winter and early spring. The flooding lasts for a few hours in areas near enlarged, deepened, or straightened constructed channels and for as long as a few days in areas near natural channels or in low areas. Individual areas range from 5 to 50 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 15 inches, very dark grayish brown silty clay

Subsoil:
15 to 22 inches, dark grayish brown silty clay that has light olive brown mottles
22 to 38 inches, dark grayish brown clay that has light olive brown mottles
38 to 51 inches, mottled olive brown and dark grayish brown clay

Underlying material:
51 to 61 inches, mottled dark grayish brown, yellowish brown, and olive brown clay

Included in mapping are small areas of Leeper soils and the moderately well drained Marietta soils on flood plains. These soils are in landscape positions similar to those of the Catalpa soil. Also included are some areas of soils that are in depressions and are frequently flooded for long periods and some areas of soils along channels that have an overwash of brown, coarse textured material about 10 inches thick. The included soils make up 10 to 15 percent of the map unit.

Important properties of the Catalpa soil—

Soil reaction: Slightly acid to moderately alkaline throughout the profile
Permeability: Slow
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 1.5 to 2.0 feet during wet seasons
Flooding: Occasional, for very brief to brief periods during late winter and early spring
Root zone: Extends to a depth of about 60 inches; somewhat restricted by a seasonal water table at a depth of 1.5 to 2.0 feet in late winter and early spring
Shrink-swell potential: Moderate in the surface layer, high in the subsoil
Tilth: This soil shrinks and cracks during dry periods. The surface layer is sticky when wet and is hard when dry, and the soil becomes cloddy if farmed when too wet or too dry.

Most of the acreage of this Catalpa soil is used as cropland or for pasture and hay. A small acreage still supports hardwood timber.

This soil is well suited to row crops, small grain, and truck crops. The seasonal wetness and flooding are the main limitations. Proper row arrangement and surface field ditches can remove excess surface water. Returning crop residue to the soil improves soil tilth, reduces crusting, and helps to maintain fertility. Seedbed preparation and cultivation are sometimes delayed in spring because of wetness and flooding. Most of the flooding occurs in winter and early spring before crops are planted, but flooding can cause moderate damage to crops in low, unprotected areas after heavy rains in summer.

The soil is well suited to pasture and hay crops that are tolerant of wetness. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Restricting use during wet periods minimizes surface compaction. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture and soil in good condition. Flooding causes some damage to plants in the lower areas, and wetness can delay the growth of plants in spring.

This soil is well suited to woodland. Bottom-land hardwoods that are tolerant of wetness and flooding are well suited, and they are the dominant trees in wooded areas. The trees preferred for planting include cherrybark oak, eastern cottonwood, sweetgum, and green ash. This soil is poorly suited to loblolly pine

because these trees do not tolerate the alkaline soil conditions. The seasonal wetness is a moderate limitation for the use of equipment. Harvesting during the drier seasons and limiting the use of heavy equipment to the drier seasons help to overcome the problems caused by wetness, minimize soil compaction, and help to prevent the formation of ruts. Plant competition is a severe management concern. Proper site preparation is needed to control undesirable plants, but the benefits of the site preparation do not extend beyond one growing season. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has fair potential as habitat for openland wildlife, good potential as habitat for woodland wildlife, and fair potential as habitat for wetland wildlife.

The flooding and the high shrink-swell potential are severe limitations on sites for residential and small commercial buildings. The low strength, flooding, and the shrink-swell potential are severe limitations on sites for local roads. Special designs and proper engineering techniques help to overcome some of the limitations. Flood-control measures generally are not practical because of the high cost. The flooding, wetness, and slow percolation are severe limitations affecting septic tanks and subsurface waste-water disposal systems. Alternative sites can be selected.

This Catalpa soil is in capability subclass IIw and in woodland suitability group 11W.

Ch—Chenneby silt loam, occasionally flooded. This nearly level, somewhat poorly drained soil is on flood plains. It formed in silty alluvium. Most areas of this soil are subject to flooding following heavy, prolonged rains during winter and early spring. The flooding lasts for a few hours in areas near enlarged, deepened, or straightened constructed channels and for as long as a few days in areas near natural, winding channels or in low areas. Individual areas range from 5 to 20 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 7 inches, dark brown silt loam

Subsoil:
7 to 14 inches, brown silt loam that has pale brown mottles
14 to 22 inches, brown silty clay loam that has strong brown and light brownish gray mottles
22 to 50 inches, light brownish gray silty clay loam that has strong brown mottles

Underlying material:
50 to 62 inches, gray silty clay loam that has yellowish brown mottles

Included in mapping are small areas of Arkabutla, Houlka, Mantachie, and Rosebloom soils on flood plains. Arkabutla and Mantachie soils are in landscape positions similar to those of the Chenneby soil. Houlka soils and the poorly drained Rosebloom soils are in depressions. Also included are some areas of soils, mainly along channels, that have overwash of loamy sediments less than 20 inches thick and some areas of soils that are in drainageways and are frequently flooded for long periods. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Chenneby soil—

Soil reaction: Very strongly acid to moderately acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 1.0 to 2.5 feet during winter and early spring
Flooding: Occasional, for very brief or brief periods in late winter and early spring
Root zone: Extends to a depth of 60 inches or more; somewhat restricted by a seasonal water table that fluctuates between a depth of 1.0 foot and 2.5 feet during winter and early spring
Shrink-swell potential: Low
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas of this Chenneby soil are used as pasture or woodland. A small acreage is used as cropland.

This soil is well suited to row crops, small grain, and truck crops. With the use of good management practices, row crops can be grown every year. Seasonal wetness is the main limitation. Proper row arrangement and surface field ditches can remove excess surface water from low areas. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting. Seedbed preparation and cultivation are sometimes delayed in spring because of wetness and flooding. Most of the flooding occurs in winter and early spring before crops are planted, but flooding can cause damage to crops during occasional wet periods.

This soil is well suited to pasture and hay crops that are tolerant of some wetness. Overgrazing or grazing when the soil is too wet causes surface compaction and

poor tilth and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition. Restricting use during wet periods minimizes surface compaction.

This soil is well suited to woodland. Most bottom-land hardwoods and pines that are tolerant of some wetness are well suited to this soil, and these are the dominant trees in wooded areas. The trees preferred for planting include cherrybark oak, sweetgum, water oak, green ash, yellow-poplar, and loblolly pine. The equipment limitation and the seedling mortality rate are moderate management concerns. If pine trees are planted, plant competition is a severe management concern. Mechanical site preparation is needed to control undesirable plants, but the benefits of the site preparation do not extend beyond one growing season. Increasing the planting rate, controlling the competing vegetation, and applying an approved herbicide help the seedlings to become established and increase the rate of growth. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees. Harvesting timber during the drier periods in summer and fall helps to prevent the formation of ruts and minimizes soil compaction.

This soil has good potential as habitat for openland and woodland wildlife. It has fair potential as habitat for wetland wildlife.

The flooding and wetness are severe limitations on sites for residential and small commercial buildings. The low strength and flooding are severe limitations on sites for local roads. Flood-control measures generally are not practical because of the high cost and some risk of damage to the property after the measures are applied. However, special designs and proper engineering techniques help to overcome some of the problems caused by wetness and flooding. The flooding and wetness are severe limitations affecting septic tanks and subsurface waste-water disposal systems. Alternative sites can be selected.

This Chenneby soil is in capability subclass IIw and in woodland suitability group 11W.

DuB2—Dulac silt loam, 2 to 5 percent slopes, eroded. This moderately well drained, gently sloping soil has a fragipan. It formed in a thin mantle of loess and the underlying clayey sediments. It is on ridgetops in the uplands. Individual areas range from 5 to 15 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 4 inches, dark brown silt loam mixed with some yellowish brown subsoil material

Subsoil:
- 4 to 12 inches, yellowish brown silt loam
- 12 to 20 inches, yellowish brown silty clay loam that has strong brown mottles
- 20 to 36 inches, a very firm, brittle, fragipan that is strong brown silt loam and has light brownish gray mottles
- 36 to 52 inches, mottled gray, strong brown, and yellowish red clay
- 52 to 60 inches, mottled gray, strong brown, yellowish red, and reddish brown clay

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. Some areas have a few rills and shallow gullies.

Included in mapping are small areas of Kipling soils. Kipling soils have a higher content of clay in the upper part of the solum than the Dulac soil. These soils do not have a fragipan. They are on slopes along drainageways and short escarpments. Also included are some areas of severely eroded Dulac soils that have a fragipan at a depth of less than 16 inches and some areas of soils that have a plow layer in the fragipan. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Dulac soil—

Soil reaction: Very strongly acid or strongly acid, except in the surface layer of areas that have been limed
Permeability: Moderate in the surface layer and upper part of the subsoil, slow in the lower part of the subsoil
Available water capacity: Moderate
Surface runoff: Medium
Erosion hazard: Moderate
Seasonal high water table: Perched above the fragipan at a depth of 1.0 to 2.0 feet during winter and early spring
Flooding: None
Root zone: Limited by the firm and compact fragipan in the subsoil at a depth of about 2.0 feet
Shrink-swell potential: Low in the surface layer and upper part of the subsoil, high in the lower part of the subsoil
Tilth: Good; can be more easily worked during dry periods

Most areas of this Dulac soil are used as cropland or pasture. A small acreage is used as woodland.

Figure 8.—Most areas of Dulac silt loam, 2 to 5 percent slopes, eroded, are used as permanent pasture.

This soil is well suited to a variety of row crops, truck crops, and small grain. The hazard of erosion is a major management concern. Other limitations include the seasonal wetness, a fragipan that limits the depth of root zone, and the moderate available water capacity. Conservation tillage, terraces, grassed waterways, and contour farming help to control erosion in cultivated fields. Crop rotation increases the content of organic matter and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is well suited to pasture and hay. Using this soil for hay and pasture also helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition (fig. 8).

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored a selected species. The trees preferred for planting include sweetgum, loblolly pine, and southern red oak. Plant competition and the use of equipment are moderate limitations. If pine trees are planted, proper site preparation can help to control undesirable plants and spraying with an approved herbicide controls subsequent growth. Restricting logging operations to drier periods during summer and fall minimizes soil compaction and helps to prevent the formation of ruts. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

The seasonal wetness is the main limitation on sites for residential and small commercial buildings. The high shrink-swell potential in the lower part of the subsoil is a management concern. The low strength on sites for local roads is a severe limitation. Special designs and proper engineering techniques help to overcome these limitations. The seasonal wetness and the slow permeability in the fragipan are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed subsurface waste-water disposal system or an approved alternative septic system helps to overcome the limitations.

This Dulac soil is in capability subclass IIe and in woodland suitability group 4W.

Gu—Guyton silt loam. This nearly level, poorly drained soil formed in silty deposits. It is in depressions on terraces and in low areas in the heads of drainageways. Individual areas of this soil are somewhat oval in shape. They range from 5 to 40 acres in size. Water ponds in the lower areas during wet seasons. Slopes generally are smooth to concave. They are 0 to 1 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 9 inches, brown and dark grayish brown silt loam that has strong brown, grayish brown, and dark brown mottles

Subsurface layer:
- 9 to 26 inches, light brownish gray silt loam that has dark brown and strong brown mottles

Subsoil:
- 26 to 33 inches, dark grayish brown silty clay that has strong brown and red mottles and has tongues of light brownish gray silt loam from the subsurface layer
- 33 to 42 inches, grayish brown silt loam that has strong brown and red mottles and has tongues of light brownish gray silt loam from the subsurface layer
- 42 to 55 inches, grayish brown loam that has strong brown mottles
- 55 to 84 inches, light brownish gray loam and clay loam that has yellowish brown and strong brown mottles

Included in mapping are small areas of Providence, Quitman, and Savannah soils. Providence and Savannah soils have a fragipan and are moderately well drained. They are on slightly higher, convex slopes. Quitman soils are somewhat poorly drained. They are on the edges of the mapped areas. Also included are small, low areas of soils that sometimes pond for very long periods. The included areas make up about 15 percent of the unit.

Important properties of the Guyton soil—

Soil reaction: Very strongly acid to slightly acid, except in the surface layer of areas that have been limed
Permeability: Slow
Available water capacity: High
Surface runoff: Very slow; low areas are ponded after heavy rains
Erosion hazard: Slight
Seasonal high water table: Fluctuates from 1.0 foot above the surface to a depth of 1.5 foot during winter and early spring
Flooding: None. Surface drainage channels have been dug in many areas. Low areas and undrained areas are subject to ponding during rainy periods.
Root zone: Deep; restricted, especially for plants that are not tolerant of wetness, by a seasonal high water table at or near the surface during winter and early spring
Tilth: Fair; the surface layer is wet for long periods during winter and early spring. The soil can be worked only during drier periods.
Shrink-swell potential: Low

Most of the acreage of the Guyton soil is used as pasture and woodland.

This soil is poorly suited to row crops, truck crops, and small grain. It is low in fertility, and water and air move slowly through it. A seasonal high water table restricts the growth of plant roots. Crops are likely to be damaged by water ponded in low areas during wet periods, and they are likely to be damaged by a lack of water during dry periods in summer and fall. Planting and harvesting activities are delayed by wetness in most years. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting and packing. Surface field ditches and proper row arrangement can remove excess surface water. In many areas, the installation of a specially designed drainage system is needed to control ponding. Regulations that apply to drainage systems should be checked before initiating drainage work.

This soil is suited to pasture and hay crops that are tolerant of wetness. Drainage ditches help to remove surface water during the growing season, but plant stands can be damaged or destroyed by flooding early in the growing season. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Bottom-land hardwoods and some swamp hardwoods in wet, low

areas are the dominant trees. The trees preferred for planting include green ash, loblolly pine, water oak, and sweetgum. The main management concern is the seasonal wetness. Restricting the use of equipment to drier periods helps to overcome the problems caused by wetness, minimizes soil compaction, and helps to prevent the formation of ruts. The seedling mortality rate is a moderate limitation. Plant competition is a severe limitation for pine seedlings. If pine trees are planted, mechanical site preparation is needed to control undesirable plants. Also, applying an approved herbicide and increasing the planting rate help to overcome competition from hardwood sprouts and reduce the seedling mortality rate. Planting pine trees on bedded rows lowers the effective depth of the high water table. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has fair potential as habitat for openland and woodland wildlife. It has good potential as habitat for wetland wildlife.

This soil is not suited as a site for residential or small commercial buildings or for septic tanks or subsurface waste-water disposal systems because of the wetness and the ponding in low areas. The slow permeability is a management concern for waste-water disposal systems. Corrective measures to control the wetness generally are not practical because of the high cost. The low strength and wetness are severe limitations on sites for local roads, but special designs and proper construction help to overcome these limitations. Alternative sites can be selected for septic tanks and subsurface waste-water disposal systems.

This Guyton soil is in capability subclass IIIw and in woodland suitability group 8W.

Ho—Houlka clay loam, occasionally flooded. This nearly level, somewhat poorly drained soil formed in clayey alluvium on broad flood plains. Most areas are subject to flooding following heavy, prolonged rains during winter and early spring. The flooding lasts for a few hours in areas near enlarged, deepened, or straightened constructed channels and for as long as a few days in areas near natural, winding channels or in low areas. Individual areas range from 5 to 20 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 6 inches, dark grayish brown clay loam

Subsoil:
6 to 15 inches, mottled dark grayish brown clay loam that has grayish brown, strong brown, and dark brown mottles
15 to 42 inches, gray clay that has strong brown mottles

Underlying material:
42 to 60 inches, gray clay loam that has strong brown mottles

Included in mapping are small areas of the moderately well drained Iuka soils, the somewhat poorly drained Chenneby and Mantachie soils, and the poorly drained Kinston and Rosebloom soils. Iuka and Chenneby soils are in landscape positions similar to those of the Houlka soil. Kinston and Rosebloom soils are in depressions. Also included are areas of poorly drained soils that are in drainageways and are frequently flooded for long periods and some areas of soils that are near stream channels and are covered with loamy overwash less than 20 inches thick. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Houlka soil—

Soil reaction: Very strongly or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Very slow
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 1.0 to 2.0 feet during winter and early spring
Flooding: Occasional, for very brief or brief periods in winter and early spring
Root zone: Deep; somewhat restricted by seasonal wetness and a high water table at a depth of 1.0 to 2.0 feet during winter and early spring
Shrink-swell potential: High
Tilth: This soil shrinks and cracks during long, dry periods. The surface layer is sticky and plastic when wet and is hard when dry. The soil becomes cloddy if farmed when too wet or too dry, and the optimum moisture content range for working the soil is narrow.

Most of the acreage of this Houlka soil is used as cropland or for pasture and hay. A small acreage supports bottom-land hardwoods.

This soil is well suited to row crops, small grain, and truck crops. The seasonal wetness and flooding are the main limitations. Proper row arrangement and surface field ditches can remove excess surface water. Returning crop residue to the soil improves soil tilth,

reduces crusting, and helps to maintain fertility. Preparing the seedbed and cultivating in spring are sometimes delayed because of the wetness and flooding. Most of the flooding occurs in winter and early spring before crops are planted, but flooding can cause moderate damage to crops in low, unprotected areas after heavy rains in summer.

This soil is well suited to pasture and hay crops that are tolerant of wetness. Overgrazing or grazing when the soil is too wet causes severe surface compaction and poor tilth and reduces the rate of water infiltration. Restricting use during wet periods minimizes surface compaction. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture and soil in good condition. Flooding causes some damage to plants in the lower areas, and wetness can delay the growth of plants in spring.

This soil is well suited to woodland. Bottom-land hardwoods and pines that are tolerant of wetness and flooding are well suited to this soil. The bottom-land hardwoods are the dominant trees in wooded areas. The trees preferred for planting include cherrybark oak, eastern cottonwood, sweetgum, green ash, and loblolly pine. The seasonal wetness is a moderate limitation for the use of equipment, but harvesting during the drier periods helps to overcome the problems caused by wetness. If pine trees are planted, plant competition is a severe limitation and the seedling mortality rate is a moderate limitation. Proper site preparation is needed to control undesirable plants, but the benefits of the site preparation do not extend beyond one growing season. The seedling mortality rate can be reduced and competing vegetation can be controlled with a combination of practices, including mechanical site preparation, applications of an approved herbicide, and an increase in the planting rate. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees. Limiting the use of heavy equipment to the drier seasons minimizes soil compaction and helps to prevent the formation of ruts.

This soil has good potential as habitat for openland and woodland wildlife. It has fair potential as habitat for wetland wildlife.

The flooding, wetness, and high shrink-swell potential are severe limitations on sites for residential and small commercial buildings. The flooding, low strength, and high shrink-swell potential are the major limitations on sites for local roads. Special designs and proper engineering techniques help to overcome some of the limitations. Flood-control measures generally are not practical because of the high cost. The flooding, the very slow permeability, and the wetness are severe limitations affecting septic tanks and subsurface waste-water disposal systems. Alternative sites can be selected.

This Houlka soil is in capability subclass IIw and in woodland suitability group 11W.

Iu—Iuka fine sandy loam, occasionally flooded. This nearly level, moderately well drained soil is on flood plains. It formed in stratified, loamy and sandy alluvium. Most areas are subject to flooding following heavy, prolonged rains during winter and early spring. The flooding lasts only for a few hours in most areas, especially near enlarged, deepened, or straightened constructed channels. It lasts for as long as a few days in some areas near natural, winding channels or in low areas. Individual areas range from 10 to 100 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 6 inches, brown fine sandy loam

Underlying material:
- 6 to 10 inches, brown fine sandy loam that has few thin pale brown strata of loamy sand
- 10 to 23 inches, yellowish brown sandy loam that has grayish brown mottles and few thin strata of loamy sand
- 23 to 48 inches, mottled light gray and strong brown loam that has few thin strata of loamy fine sand and clay loam
- 48 to 60 inches, mottled light gray and strong brown clay loam

Included in mapping are small areas of Bibb, Kinston, and Mantachie soils on flood plains. Bibb and Kinston soils are poorly drained. They are in lower landscape positions in depressions and sloughs. Mantachie soils are somewhat poorly drained. They are on the backlands of the flood plain, farther from the channels than the Iuka soil. Also included are a few areas of soils in sloughs and old channels where water is ponded except during prolonged periods of drought; a few areas of adjacent soils that have a channel overwash of loamy deposits less than 20 inches thick; and a few areas of soils in old streambeds that are frequently flooded for long periods. The included soils make up about 15 percent of the map unit.

Important properties of the Iuka soil—

Soil reaction: Strongly acid or slightly acid throughout the profile, except in the surface layer of areas that have been limed

Permeability: Moderate

Figure 9.—Soybeans were recently planted in this area of Iuka fine sandy loam, occasionally flooded.

Available water capacity: Moderate
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 1.0 to 3.0 feet in winter and early spring
Flooding: Occasional, for very brief to brief periods following heavy rainfall, mainly in late winter and early spring
Root zone: Deep; somewhat restricted for plants that do not tolerate seasonal wetness by a seasonal water table at a depth of 1.0 to 3.0 feet in winter and early spring
Shrink-swell potential: Low
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas of the Iuka soil are used as cropland or pasture. A small acreage is used as woodland.

This soil is well suited to row crops, small grain, and truck crops. However, wetness is a management concern. With the use of good management practices, row crops can be grown every year and the maximum yields can be obtained. The slow runoff rate is a management concern during wet periods. Proper row arrangement and surface field ditches can remove excess surface water from low areas (fig. 9). Returning crop residue to the soil improves soil tilth and reduces

Figure 10.—If properly managed, areas of Iuka fine sandy loam, occasionally flooded, produce excellent grass-legume hay.

crusting. Seedbed preparation and cultivation are sometimes delayed in spring because of excessive moisture. Although this soil is subject to flooding in winter and early spring before crops are planted, crop damage from flooding seldom occurs during the growing season.

This soil is well suited to pasture and hay (fig. 10). Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition. Restricting use during wet periods minimizes surface compaction.

This soil is well suited to woodland. Bottom-land hardwoods and pines that are tolerant of occasional flooding are well suited to this soil, and these are the dominant native trees. The trees preferred for planting include cherrybark oak, eastern cottonwood, sweetgum, yellow-poplar, and loblolly pine. The main limitations for timber management are plant competition, the seedling mortality rate, and the equipment limitation. Plant competition is the most significant limitation, and it is a severe limitation for establishing pine trees. The use of equipment and the seedling mortality rate are moderate limitations. If pine trees are planted, special mechanical site preparation, such as a cutting of hardwoods followed by harrowing, helps to control competition from undesirable plants, reduces the seedling mortality rate, and increases the early growth of seedlings. Increasing the planting rate also helps the seedlings to become established. The benefits of the site preparation do not extend beyond one growing season. Spraying with an approved herbicide helps to control the competing hardwood sprouts. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees. Limiting the use of equipment

and harvesting to the drier periods in summer and fall help to prevent the formation of ruts and minimize soil compaction.

This soil has good potential as habitat for openland and woodland wildlife. It has poor potential as habitat for wetland wildlife.

The flooding and wetness are severe limitations on sites for residential and small commercial buildings. Flooding is a severe limitation on sites for local roads. Flood-control measures generally are not practical because of the high cost. Special design and engineering techniques and proper construction help to to overcome the limitations. The flooding and wetness are severe limitations affecting septic tanks and subsurface waste-water disposal systems. A specially designed system can be used, or an alternative site can be selected.

This Iuka soil is in capability subclass IIw and in woodland suitability group 9W.

Kn—Kinston loam, frequently flooded. This nearly level, poorly drained soil formed in stratified loamy alluvium on flood plains. It is mainly on narrow flood plains and in slightly depressional areas, such as sloughs on broad flood plains. It is subject to flooding, generally from December through May in most years. However, the flooding occurs throughout the year following heavy rainfalls. The flooding generally lasts for several days, but some low areas are inundated for longer periods. Individual areas range from 5 to 50 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 4 inches, dark gray loam

Subsurface layer:
4 to 13 inches, gray loam that has yellowish brown mottles

Underlying material:
13 to 45 inches, light gray clay loam that has yellowish brown mottles
45 to 60 inches, gray clay loam that has strong brown mottles
60 to 70 inches, gray loam that has strong brown and light gray mottles

Included in mapping are small areas of Chenneby, Iuka, Mantachie, and Rosebloom soils on flood plains. Chenneby and Mantachie soils are somewhat poorly drained. They are in slightly higher positions on the flood plain than the Kinston soil. Iuka soils are moderately well drained and are on low swells or along channels. The poorly drained Rosebloom soils have a higher content of silt. They are in landscape positions similar to those of the Kinston soil. Also included are areas of soils that are overlain by sandy overbank deposits mainly less than 20 inches thick. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Kinston soil—

Soil reaction: Very strongly or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate
Available water capacity: High
Surface runoff: Slow to ponded
Erosion hazard: Slight
Seasonal high water table: At or near the surface to a depth of 1.0 foot in winter and spring
Flooding: Frequent for brief to long periods, depending on the elevation above channels. Depressional areas are flooded for long periods.
Root zone: Deep; somewhat restricted for plants that are not tolerant of wetness by a seasonal water table near the surface in spring
Shrink-swell potential: Low
Tilth: Good; can be more easily worked during drier periods

Most areas of this Kinston soil are used as woodland. A small acreage is used as pasture.

This soil is poorly suited to row crops, truck crops, and small grain because of wetness and frequent flooding. These limitations can be partially overcome by installing a major flood-control system and a specially planned drainage and levee system. Regulations that apply to drainage systems should be checked before initiating drainage work.

This soil is suited to pasture and hay crops that are tolerant of wetness. Drainage ditches help to remove surface water during the growing season, but plant stands can be damaged or destroyed by flooding early in the growing season. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Bottom-land hardwoods and a mixture of swamp hardwoods, mainly in the lower areas, are the dominant trees. The trees preferred for planting include green ash, loblolly pine, and sweetgum. Flooding and wetness, as they affect the use of equipment and the seedling mortality rate, are severe limitations for forest management. The use of equipment is limited to drier periods because of the wetness and flooding. If pine trees are planted, plant competition is a severe management concern. Planting

pine trees on bedded rows reduces the seedling mortality rate by lowering the effective depth of the high water table. Site preparation, such as chopping existing hardwoods, harrowing, and applying an approved herbicide, help to control the immediate plant competition and reduce the seedling mortality rate. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger.

This soil has poor potential as habitat for openland and woodland wildlife. It has fair potential as habitat for wetland wildlife.

This soil is not suited as a site for residential or small commercial buildings or for septic tanks or subsurface waste-water disposal systems because of the wetness and frequent flooding. Flood-control measures generally are not practical because of the high cost. The low strength, the wetness, and flooding are severe limitations on sites for local roads. Special designs and proper construction minimize these limitations. Alternative sites can be selected for septic tanks and subsurface waste-water disposal systems.

This Kinston soil is in capability subclass VIw and in woodland suitability group 9W.

KpB2—Kipling silt loam, 2 to 5 percent slopes, eroded. This somewhat poorly drained, gently sloping soil formed in acid clay and the underlying marly clay and chalk. It is on broad ridgetops in the uplands of the Blackland Prairie. Individual areas range from 5 to 30 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 6 inches, brown silt loam mixed with a small amount of strong brown subsoil material

Subsoil:

6 to 14 inches, strong brown silty clay

14 to 25 inches, yellowish brown clay that has red and light brownish gray mottles

25 to 36 inches, light yellowish brown clay that has light brownish gray and strong brown mottles

36 to 46 inches, mottled light brownish gray, yellowish brown and brown clay that has calcium carbonate concretions in the lower part

46 to 55 inches, brownish yellow clay that has calcium carbonate concretions

55 to 60 inches, light gray clay

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. Some areas have a few rills and shallow gullies.

Included in mapping are small areas of Dulac soils, which have a higher content of silt in the upper part of the solum than the Kipling soil. They have a fragipan in the subsoil. Dulac soils are on broader, gentle slopes mainly on ridgetops. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Kipling soil—

Soil reaction: Very strongly acid to moderately acid in the surface layer and upper part of the subsoil, except in limed areas; very strongly acid to moderately alkaline in the lower part of the subsoil; and strongly acid to moderately alkaline in the underlying material

Permeability: Slow in the surface layer and upper part of the subsoil, very slow in the lower part of the subsoil

Available water capacity: Very high

Surface runoff: Slow to medium

Erosion hazard: Moderate

Seasonal high water table: At a depth of 1.5 to 3.0 feet during wet periods. This soil is excessively wet because of the clayey texture and very slow permeability.

Flooding: None

Root zone: Deep; somewhat restricted by excessive wetness in the subsoil layer during winter and early spring and by the firm, sticky, and plastic subsoil

Shrink-swell potential: High in the upper part of the solum, very high in the lower part

Tilth: The surface layer is hard when dry. If the soil is tilled when too wet or too dry, clods tend to form. The optimum range in moisture content for tilling is narrow.

Most areas of this Kipling soil are used for row crops or pasture. A small acreage is used as woodland.

This soil is suited to row crops, truck crops, and small grain. The main management concerns are the moderate hazard of erosion, the seasonal wetness, and the high content of clay. If this soil is used for cultivated crops, good management practices, such as conservation tillage, terraces, grassed waterways, returning crop residue to the soil, contour farming, contour stripcropping, and a crop rotation that includes grasses and legumes, help to control runoff and erosion. Planting cultivated crops that produce large amounts of residue reduces crusting and packing and helps to control erosion.

This soil is well suited to pasture and hay (fig. 11). The low productivity and the moderate hazard of erosion are the main limitations. Because it has a high content of clay, this soil is very sticky and plastic when

Figure 11.—A grass-legume pasture in an area of Kipling silt loam, 2 to 5 percent slopes, eroded. It provides excellent forage for cattle and horses.

wet. Grazing when the soil is too wet causes compaction of the surface layer, resulting in a reduced infiltration rate and an increased runoff rate. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. The wooded areas mainly consist of a mixture of hardwoods and pine trees, except where management practices have favored a selected species. The trees preferred for planting are cherrybark oak, Shumard oak, sweetgum, and loblolly pine. The use of equipment is moderately limited because the soil is clayey and is sticky and plastic when wet, which restricts trafficability. Logging during the drier periods in summer and fall minimizes soil compaction and prevents the formation of ruts. If pine trees are planted, plant competition and the seedling mortality rate are moderate limitations. Special site preparation practices, such as harrowing, cutting, or girdling, help to control undesirable plants, including

Figure 12.—A crack in the wall of a house built in an area of Kipling silt loam, 2 to 5 percent slopes, eroded. The crack is a result of the high shrink-swell potential.

weeds, brush, and trees. Decreasing the amount of plant competition reduces the seedling mortality rate and increases the growth of seedlings. After seedlings are established, spraying with an approved herbicide helps to control unwanted plants. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has poor potential as habitat for wetland wildlife.

The high shrink-swell potential in the clayey subsoil is the main limitation on sites for residential and small commercial buildings (fig. 12). The low strength and high shrink-swell potential are severe limitations on sites for local roads. Special designs and proper construction help to overcome some of these

limitations. The very slow permeability in the clayey subsoil and the wetness are severe limitations for septic tanks and subsurface waste-water disposal fields. A specially designed, alternative system helps to overcome the limitations, or alternative sites can be used.

This Kipling soil is in capability subclass IIIe and in woodland suitability group 9C.

KrC3—Kipling silty clay loam, 5 to 8 percent slopes, severely eroded. This somewhat poorly drained soil formed in acid clay and the underlying marly clay and chalk in the uplands of the Blackland Prairie. It is moderately sloping and is mainly on hillsides above drainageways. Individual areas range from 10 to 30 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 3 inches, dark brown silty clay loam mixed with a large amount of mottled pale brown and red subsoil material

Subsoil:
- 3 to 10 inches, mottled pale brown, red, and light brownish gray clay
- 10 to 19 inches, mottled red and light brownish gray clay
- 19 to 33 inches, mottled light brownish gray, yellowish red, and yellowish brown clay
- 33 to 39 inches, mottled strong brown and light brownish gray clay
- 39 to 46 inches, light gray clay that has yellowish brown mottles
- 46 to 60 inches, mottled light brownish gray, yellowish brown, and brown clay

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of Dulac and Sumter soils. Dulac soils have a higher content of silt in the upper part of the solum than the Kipling soil. They have a fragipan. They are mainly on ridgetops. Sumter soils have a thinner solum and are calcareous. They are mainly on short escarpments. Also included are soils that have a high content of silt to a depth of 2.5 to 3.0 feet and are on broader slopes in undulating areas. Some areas of soils that have slopes of more than 8 percent are also included. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Kipling soil—

Soil reaction: Very strongly acid to moderately acid in the surface layer and upper part of the subsoil, except in limed areas; very strongly acid to moderately alkaline in the lower part of the subsoil and the substratum
Permeability: Slow in the surface layer and upper part of the subsoil, very slow in the lower part of the subsoil
Available water capacity: Very high
Surface runoff: Medium
Erosion hazard: Severe
Seasonal high water table: At a depth of 1.5 to 3.0 feet during wet periods. This soil is excessively wet because of the clayey texture and very slow permeability.
Flooding: None
Root zone: Deep; somewhat restricted by seasonal wetness during winter and early spring and by the firm, sticky, and plastic clayey subsoil
Shrink-swell potential: High in the upper part of the solum, very high in the lower part
Tilth: The surface layer is hard when dry. If the soil is tilled when too wet or too dry, clods are formed. The optimum range in moisture content for tillage is narrow.

Most of the acreage of this Kipling soil is used for pasture. A small acreage is used for row crops or woodland.

This soil is suited to row crops, truck crops, and small grain. It is limited mainly by the slope, the severe hazard of erosion (fig. 13), and the clayey texture. If cultivated crops are grown, intensive conservation practices are needed. A combination of various erosion-control measures, including a grass and legume rotation, cover crops, conservation tillage, contour farming, grassed waterways, and terraces, help to control runoff, control the hazard of erosion, conserve moisture, and maintain tilth.

This soil is suited to pasture and hay. The low productivity, the moderate slopes, and the severe hazard of erosion are the main management concerns. Using this soil for permanent pasture and hay effectively controls erosion. Overgrazing or grazing when the soil is too wet causes surface compaction, reduces the rate of water infiltration, and increases the runoff rate. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods, eastern redcedar, and pine trees, except where management

Figure 13.—An area of Kipling silty clay loam, 5 to 8 percent slopes, severely eroded. Because of the erosion, only a sparse stand of soybeans will grow.

practices have favored selected species. The trees preferred for planting include cherrybark oak, Shumard oak, sweetgum, and loblolly pine. The use of equipment is moderately limited because the soil is clayey and is sticky and plastic when wet, which restricts trafficability. This limitation can be partially overcome by logging during drier periods. If pine trees are planted, plant competition and seedling mortality are moderate limitations. Using mechanical cultivation and increasing the planting rate help to overcome the limitations. After planting, applications of an approved herbicide help to control undesirable plants and increase the survival rate of seedlings. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

The high shrink-swell potential of the clayey subsoil is the main limitation on sites for residential and small commercial buildings. The low strength and high shrink-swell potential are severe limitations on sites for local roads. Special designs and proper construction help to overcome some of these limitations. Erosion is a hazard in areas that have been cleared for construction. However, designing roads and dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The very slow permeability in the clayey

subsoil is a severe limitation for septic tanks and wastewater disposal fields. A specially designed, alternative system helps to overcome the limitations, or alternative sites can be used.

This Kipling soil is in capability subclass IVe and in woodland suitability group 9C.

KrD3—Kipling silty clay loam, 8 to 12 percent slopes, severely eroded. This somewhat poorly drained soil formed in acid clay and the underlying marly clay and chalk in the uplands of the Blackland Prairie. It is strongly sloping and is mainly on hillsides above drainageways. Individual areas range from 5 to 30 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 3 inches, dark brown silty clay loam mixed with a large amount of mottled pale brown and red material

Subsoil:

3 to 10 inches, mottled pale brown, red, and light brownish gray clay

10 to 19 inches, mottled red and light brownish gray clay

19 to 33 inches, mottled light brownish gray, yellowish red, and yellowish brown clay

33 to 39 inches, mottled strong brown and light brownish gray clay

39 to 46 inches, light gray clay that has yellowish brown mottles

46 to 60 inches, mottled light brownish gray, yellowish brown, and brown clay

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of Sumter soils. Sumter soils have a thinner solum than the Kipling soil and are calcareous. They are on short escarpments. Also included are small areas of Kipling soils that have slopes of less than 8 percent and some chalk bedrock outcrops. These included areas make up about 10 to 15 percent of the map unit.

Important properties of the Kipling soil—

Soil reaction: Very strongly acid to moderately acid in the surface layer and upper part of the subsoil, except in limed areas; very strongly acid to moderately alkaline in the lower part of the subsoil and the underlying material

Permeability: Slow in the surface layer and upper part of the subsoil, very slow in the lower part of the subsoil

Available water capacity: Very high

Surface runoff: Rapid

Erosion hazard: Severe

Seasonal high water table: At a depth of 1.5 to 3.0 feet during wet periods. This soil is excessively wet because of the clayey texture and very slow permeability.

Flooding: None

Root zone: Deep; somewhat restricted by seasonal wetness during winter and early spring and by the firm, sticky, and plastic clayey subsoil

Shrink-swell potential: High in the upper part of the solum, very high in the lower part

Tilth: The surface layer is hard when dry. If the soil is tilled when too wet or too dry, clods form. The optimum range in moisture content for cultivation is narrow.

Most areas of this Kipling soil are used for woodland. A small acreage is used as pasture.

This severely eroded soil is unsuited to row crops, truck crops, and small grain. It has low productivity and a very severe hazard of erosion. Maintaining a permanent vegetative cover helps to control runoff and erosion.

This soil is suited to pasture and hay. The low productivity and the severe hazard of erosion are the main limitations. Overgrazing or grazing when the soil is too wet causes surface compaction, reduces the rate of water infiltration, and increases the runoff rate. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of mixed hardwoods, eastern redcedar, and pine trees, except in areas where management practices have favored a selected species. The trees preferred for planting include cherrybark oak, sweetgum, and loblolly pine. The use of equipment is moderately limited because the soil is clayey. The hazard of erosion is moderate because of the slope. Because this clayey soil is sticky when wet, planting and harvesting equipment can be more efficiently used during drier periods. Management practices that minimize the hazard of erosion are beneficial during timber harvesting. They prevent the accelerated erosion and formation of gullies that result in the sedimentation of other areas. If pine trees are planted, plant competition and seedling mortality are moderate limitations. Using mechanical cultivation and increasing the planting rate help to overcome the limitations. After planting, applications of an approved herbicide help to

control competition from undesirable plants and improve the seedling survival rate. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has fair potential as habitat for openland wildlife, good potential as habitat for woodland wildlife, and very poor potential as habitat for wetland wildlife.

The high shrink-swell potential is the main limitation on sites for residential and small commercial buildings. The slope is also a severe limitation on sites for small commercial buildings. The high shrink-swell potential in the clayey subsoil and the low strength are severe limitations on sites for local roads. Special design and engineering techniques and proper construction help to overcome some of these limitations. Erosion is a hazard in areas that have been cleared for construction. However, designing roads and dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The very slow permeability and the wetness in the clayey subsoil are severe limitations for septic tanks and waste-water disposal systems. Alternative sites can be used, or a specially designed and approved alternative system helps to overcome the limitations.

This Kipling soil is in capability subclass VIIe and in woodland suitability group 9C.

KrF3—Kipling silty clay loam, 12 to 40 percent slopes, severely eroded. This moderately steep to steep, somewhat poorly drained soil formed in acid clay and the underlying marly clay and chalk in the uplands of the Blackland Prairie. It is mainly on hillsides above drainageways. Individual areas range from 5 to 30 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 3 inches, dark brown silty clay loam mixed with a large amount of mottled pale brown and red subsoil material

Subsoil:
- 3 to 10 inches, mottled pale brown, red, and light brownish gray clay
- 10 to 19 inches, mottled red and light brownish gray clay
- 19 to 33 inches, mottled light brownish gray, yellowish red, and yellowish brown clay
- 33 to 39 inches, mottled strong brown and light brownish gray clay
- 39 to 46 inches, light gray clay that has yellowish brown mottles
- 46 to 60 inches, mottled light brownish gray, yellowish brown, and brown clay

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of Sumter soils in landscape positions similar to those of the Kipling soil. Also included are small areas of soils that have slopes of less than 12 percent, areas of soils that have chalk at a depth of less than 24 inches, and areas of chalk outcrops. The included areas make up about 10 to 15 percent of the map unit.

Important properties of the Kipling soil—

Soil reaction: Very strongly acid to moderately acid in the surface layer and upper part of the subsoil, except in limed areas; very strongly acid to moderately alkaline in the lower part of the subsoil and the underlying material
Permeability: Slow in the surface layer and upper part of the subsoil, very slow in the lower part of the subsoil
Available water capacity: Very high
Surface runoff: Rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of 1.5 to 3.0 feet during wet periods. This soil is excessively wet because of the clayey texture and very slow permeability.
Flooding: None
Root zone: Deep; somewhat restricted by seasonal wetness during winter and early spring and by the firm, sticky, and plastic clayey subsoil
Shrink-swell potential: High in the upper part of the solum, very high in the lower part
Tilth: The surface layer is hard when dry. If tilled when too wet or too dry, clods will form. The optimum range in moisture content for cultivation is narrow.

Most areas of this Kipling soil are used for woodland. A small acreage is used as pasture.

This soil is unsuited to row crops, truck crops, and small grain because of the slope, the low productivity, and the very severe hazard of erosion. Establishing permanent vegetation, especially trees, helps to control runoff and erosion.

This soil is poorly suited to pasture and hay. The low productivity, the slope, and the severe hazard of erosion are the main limitations. Shallow gullies and washouts tend to form along livestock trails on the steeper slopes. Overgrazing or grazing when the soil is

too wet causes surface compaction, reduces the rate of water infiltration, and increases the runoff rate. The use of equipment for weed and brush control is difficult because of the slope.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods, eastern redcedar, and pine trees, except where management practices have favored a selected species. The trees preferred for planting include cherrybark oak, sweetgum, and loblolly pine. The slope is a moderate limitation for the use of equipment. During rainy periods the soil is sticky and plastic, which restricts trafficability. Limiting the use of planting and harvesting equipment to drier periods minimizes soil compaction and helps to prevent the formation of ruts. The hazard of erosion is moderate because of the slope. During timber harvesting, specially designed road drainage systems and properly placed culverts minimize the hazard of erosion, reduce gullying, and reduce the sedimentation of other areas. If pine trees are planted, plant competition and seedling mortality are moderate limitations. Proper site preparation practices, such as spraying, cutting, or girdling undesirable plants, and applications of an approved herbicide minimize plant competition and increase the seedling survival rate. Increasing the planting rate decreases the seeding mortality rate. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has fair potential as habitat for openland wildlife, good potential as habitat for woodland wildlife, and very poor potential as habitat for wetland wildlife.

This map unit is not suited to most urban uses. The slope is the main limitation. The high shrink-swell potential and the slope are severe limitations on sites for residential and small commercial buildings. The high shrink-swell potential in the clayey subsoil, the slope, and the low strength are severe limitations for local roads. Special design and engineering techniques and proper construction help to overcome some of the limitations. Constructing roads on the contour helps to overcome the slope. The very slow permeability in the clayey subsoil, the wetness, and the slope are severe limitations for septic tanks and waste-water disposal systems. A specially designed and approved alternative system helps to overcome the limitations, or alternative sites can be used.

This Kipling soil is in capability subclass VIIe and in woodland suitability group 9C.

Kv—Kirkville fine sandy loam, occasionally flooded. This nearly level, moderately well drained soil is on flood plains along small streams. It formed in loamy alluvial sediments. Most areas are subject to flooding following heavy, prolonged rains during winter and early spring, mainly before crops are planted. The flooding lasts for a few days near natural, winding channels. It lasts for much less time in areas near channels that have been enlarged, deepened, and straightened. Individual areas range from 5 to 60 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 7 inches, dark brown fine sandy loam

Subsoil:
7 to 18 inches, dark yellowish brown loam
18 to 46 inches, yellowish brown fine sandy loam that has light brownish gray mottles

Underlying material:
46 inches to more than 60 inches, light brownish gray fine sandy loam that has yellowish brown and yellowish red mottles

Included in mapping are small areas of Bibb, Iuka, Kinston, and Mantachie soils on flood plains. Bibb and Kinston soils are poorly drained soils in sloughs and old channels. Water ponds in some lower areas of these soils during wet seasons. Iuka soils are moderately well drained. They are in slightly lower landscape positions than the Kirkville soil. Mantachie soils are somewhat poorly drained soils in slightly lower positions in drainageways. Also included along channels are some areas of soils that have less than 20 inches of sandy and loamy overwash. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Kirkville soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate
Available water capacity: Moderate
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 1.5 to 2.5 feet in winter and early spring
Flooding: Occasional, for very brief or brief periods following heavy rainfall mainly in late winter and early spring; rare during other seasons
Root zone: Deep; somewhat restricted for plants that are not tolerant of wetness by a seasonal water table that fluctuates between a depth of 1.5 and 2.5 feet in winter and early spring
Shrink-swell potential: Low
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas of this Kirkville soil are used for row crops or pasture. A small acreage is used as woodland.

This soil is well suited to row crops, small grain, and truck crops. With the use of good management practices, row crops can be grown every year. Seasonal wetness is the main limitation. Proper row arrangement and surface field ditches can remove excess surface water from low areas. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting. Seedbed preparation and cultivation are sometimes delayed in spring because of wetness and flooding. Most of the flooding occurs in winter and early spring before crops are planted, but flooding can cause damage to crops during occasional wet periods.

This soil is well suited to pasture and hay. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition. Restricting use during wet periods minimizes surface compaction.

This soil is well suited to woodland. Most bottom-land hardwoods and pines that are tolerant of some wetness are well suited to this soil, and these are the dominant native trees. The trees preferred for planting include cherrybark oak, eastern cottonwood, sweetgum, yellow-poplar, and loblolly pine. If pine trees are planted, plant competition is a severe management concern. The seasonal wetness is a moderate limitation for the use of equipment. The seedling mortality rate is moderate. If pine trees are planted, mechanical site preparation is needed to control undesirable plants, but the benefits of the site preparation do not extend beyond one growing season. Increasing the planting rate and applying an approved herbicide help to establish the desired stands of seedlings. Harvesting timber during the drier periods in summer and fall helps to prevent the formation of ruts and minimizes soil compaction. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has poor potential as habitat for wetland wildlife.

The flooding is a severe limitation on sites for residential and small commercial buildings and for local roads. Flood-control measures generally are not practical because of the high cost and some risk of damage to the property after the measures are applied. However, special designs and proper engineering techniques help to minimize the damage from flooding. The flooding and wetness are severe limitations affecting septic tanks and subsurface waste-water disposal systems. If protected from flooding, a specially designed subsurface waste-water disposal system or an approved alternative septic system helps to overcome the wetness. Alternative sites can be selected.

This Kirkville soil is in capability subclass IIw and in woodland suitability group 10W.

Le—Leeper silty clay, occasionally flooded. This nearly level, somewhat poorly drained soil formed in clayey alluvium on broad flood plains. Most areas are subject to flooding following heavy, prolonged rains during winter and early spring. The flooding lasts for a few days near natural, winding channels or in low areas. It lasts for a few hours in most areas along channels that have been enlarged, deepened, or straightened. Slopes range from 0 to 2 percent. Individual areas range from 5 to 60 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 8 inches, brown silty clay

Subsoil:
8 to 15 inches, dark grayish brown silty clay that has strong brown mottles
15 to 30 inches, dark grayish brown silty clay that has strong brown and grayish brown mottles
30 to 60 inches, mottled gray and strong brown clay

Included in mapping are small areas of Catalpa soils and the moderately well drained Marietta soils, which are on slightly convex parts of the flood plain and along deep channels. Also included are small areas of soils that are in sloughs and depressions and are frequently flooded for long periods and small areas of soils that are near stream channels and have less than 20 inches of sandy overwash. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Leeper soil—

Soil reaction: Moderately acid to moderately alkaline throughout the profile
Permeability: Very slow
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 1.0 to 2.0 feet during wet seasons
Flooding: Occasional, for very brief or brief periods, following heavy rainfall in late winter and early spring
Root zone: Deep; somewhat restricted by a seasonal water table that fluctuates between a depth of 1.0 and 2.0 feet

Shrink-swell potential: High; shrinking and cracking occurs during dry periods
Tilth: This soil shrinks and cracks during dry periods. The surface layer is sticky when wet and hard when dry. The soil becomes cloddy if farmed when too wet or too dry. The optimum range in moisture content for working the soil is narrow.

Most of the acreage of this Leeper soil is used as cropland or for pasture or hay. A small acreage still supports hardwood timber.

This soil is well suited to row crops, small grain, and truck crops. The seasonal wetness and flooding are the main limitations. Proper row arrangement and surface field ditches can remove excess surface water from low areas. Returning crop residue to the soil improves soil tilth, reduces crusting, and helps to maintain fertility. The soil dries slowly after heavy rains and is sticky when wet. Seedbed preparation and cultivation are sometimes delayed in spring because of wetness and flooding. Most of the flooding occurs in winter and early spring before crops are planted, but flooding can cause moderate damage to crops in low, unprotected areas after heavy rains in summer.

This soil is well suited to pasture and hay crops that are tolerant of wetness. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Restricting use during wet periods minimizes surface compaction. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture and soil in good condition. Flooding causes some damage to plants in the lower areas, and wetness can delay the growth of plants in spring.

This soil is well suited to woodland. Bottom-land hardwoods that are tolerant of wetness and flooding are the dominant trees in wooded areas. This soil is well suited to bottom-land hardwoods. The trees preferred for planting include cherrybark oak, eastern cottonwood, sweetgum, and green ash. The soil is poorly suited to loblolly pine because of the alkaline reaction in the subsoil. The seasonal wetness is a moderate limitation for the use of equipment. Harvesting during drier periods helps to overcome the problems caused by the wetness. Plant competition and seedling mortality are moderate limitations. Before planting, the site should be prepared to reduce competition from undesirable plants. Spraying with an approved herbicide, cutting, and girdling eliminate unwanted weeds, bushes, and trees. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Timber stands can be improved by leaving preferred trees for seed production. Limiting the use of heavy equipment to drier periods minimizes soil compaction and helps to prevent the formation of ruts.

This soil has good potential as habitat for openland and woodland wildlife. It has fair potential as habitat for wetland wildlife.

The flooding, wetness, and the high shrink-swell potential are severe limitations on sites for residential and small commercial buildings. The flooding, low strength, and high shrink-swell potential are major limitations on sites for local roads. Special designs and proper engineering techniques help to overcome some of the limitations. Flood-control measures generally are not practical because of the high cost. The flooding, the very slow permeability, and the wetness are severe limitations affecting septic tanks and subsurface waste-water disposal systems. Alternative sites can be selected.

This Leeper is in capability subclass IIw and in woodland suitability group 11W.

LuC3—Luverne fine sandy loam, 5 to 8 percent slopes, severely eroded. This well drained, moderately sloping soil formed in clayey sediments that have strata of silty and sandy material. It is on ridgetops and hillslopes in moderate or high positions on dissected uplands. Individual areas range from 5 to 50 acres in size. Slopes generally are long and are dissected by well defined drainageways.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 2 inches, dark yellowish brown fine sandy loam mixed with some yellowish red subsoil material
Subsoil:
2 to 32 inches, yellowish red sandy clay
32 to 45 inches, yellowish red sandy clay that has pale brown and red mottles
Underlying material:
45 to 60 inches, mottled light red, strong brown, and light brownish gray sandy clay loam that has thin strata of loamy material

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of Ruston and Tippah soils. Ruston soils have a lower content of clay and are more friable than the Luverne soil. They are generally in higher positions on the landscape on broader ridgetops. Tippah soils have a higher content of

silt in the upper part of the solum than the Luverne soil. They are moderately well drained and are on broader, smoother slopes on high shoulder slopes and ridgetops. Also included are some small areas of soils that are on ridgetops and have a clayey solum overlying a sandy substratum. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Luverne soil—

Soil reaction: Extremely acid to strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderately slow
Available water capacity: High
Surface runoff: Medium to rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: Deep
Shrink-swell potential: Moderate
Tilth: Fair

Most of the acreage of this Luverne soil is used as pasture or woodland. A few areas are used for row crops.

This soil is poorly suited to row crops because of the severe hazard of erosion, the low productivity, and the clayey texture. Management practices, such as returning crop residue to the soil, minimum tillage, crop rotation, contour farming, terraces, and grassed waterways are needed in cultivated areas. A permanent vegetative cover helps to control erosion.

This soil is poorly suited to pasture and hay. The low productivity, the slope, and the severe hazard of erosion are the main management concerns. Overgrazing or grazing when the soil is too wet causes surface compaction, reduces the rate of water infiltration, and increases the runoff rate. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored a selected species. The preferred tree for planting is loblolly pine. The use of equipment is moderately limited because the soil is clayey and is sticky and plastic when wet, which restricts trafficability. Restricting logging activities to drier periods in summer and fall minimizes soil compaction and helps to prevent the formation of ruts. If pine trees are planted, plant competition is a moderate limitation. Proper site preparation helps to control undesirable plants. Spraying with an approved herbicide, cutting, and girdling eliminate unwanted weeds, brush, and trees. After the trees are planted, plant competition can be controlled by spraying with an approved herbicide. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

The shrink-swell potential is a moderate limitation on sites for residential buildings. The shrink-swell potential in the clayey subsoil and the slope are moderate limitations on sites for small commercial buildings. The low strength is a severe limitation on sites for local roads. Special designs and proper construction help to overcome some of these limitations. Erosion is a hazard in areas that have been cleared for construction. However, designing roads and dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The moderately slow permeability in the clayey subsoil is a severe limitation for septic tanks and subsurface waste-water disposal fields. A specially designed and approved alternative system helps to overcome the limitations, or alternative sites can be used.

This Luverne soil is in capability subclass VIe and in woodland suitability group 8C.

LuD3—Luverne fine sandy loam, 8 to 12 percent slopes, severely eroded. This well drained, strongly sloping soil formed in clayey sediments that have strata of silty and sandy material. It is on hillslopes in the uplands. Individual areas range from 5 to 30 acres in size. Slopes generally are fairly long and have well defined drainageways.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 2 inches, dark yellowish brown fine sandy loam mixed with some yellowish red subsoil material
Subsoil:
2 to 32 inches, yellowish red sandy clay
32 to 45 inches, yellowish red sandy clay that has pale brownish gray and red mottles
Substratum:
45 to 60 inches, mottled red, strong brown, and light brownish gray sandy clay loam that has thin strata of loamy material

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the

remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of Smithdale and Tippah soils. Smithdale soils have a lower content of clay than the Luverne soil. They are in landscape positions similar to those of the Luverne soil. The moderately well drained Tippah soils are in wider, smoother, and less sloping positions on ridge crests between drainageways. Also included are small areas of soils that have slopes of more than 12 percent. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Luverne soil—

Soil reaction: Extremely acid to strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderately slow
Available water capacity: High
Surface runoff: Rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: Deep
Shrink-swell potential: Moderate
Tilth: Fair

Most of the acreage of this Luverne soil is used as pasture or woodland. A few areas are used for row crops.

This soil is poorly suited to row crops, truck crops, and small grain because of the low productivity, the slope, the very severe hazard of erosion, and the clayey texture. Maintaining permanent vegetation helps to control erosion.

This soil is poorly suited to pasture and hay. The low productivity, the slope, and the very severe hazard of erosion are the main management concerns. Overgrazing or grazing when the soil is too wet causes surface compaction, reduces the rate of water infiltration, and increases the runoff rate. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except in areas where management practices have favored a selected species. The preferred tree for planting is loblolly pine. The use of equipment is moderately limited because the soil is sticky and plastic when wet, which restricts trafficability. This limitation can be partially overcome by logging during drier periods. If pine trees are planted, plant competition is a moderate limitation. Competing vegetation can be controlled by proper site preparation. Girdling, cutting unwanted trees, and applying an approved herbicide help to control undesirable plants and increase the seedling survival rate. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

The high shrink-swell potential in the clayey subsoil and the slope are moderate limitations on sites for residential buildings. The slope is a severe limitation on sites for small commercial buildings. The low strength is a severe limitation on sites for local roads. Special designs and proper construction help to overcome some of these limitations. Erosion is a hazard in areas that have been cleared for construction. However, constructing roads on the contour and designing dwellings that conform to the natural slope minimize the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The moderately slow permeability in the clayey subsoil is a severe limitation for septic tanks and subsurface waste-water disposal fields. A specially designed alternative system helps to overcome the limitations, or alternative sites can be used.

This Luverne soil is in capability subclass VIe and in woodland suitability group 8C.

LV—Luverne and Smithdale sandy loams, 5 to 45 percent slopes. This map unit consists of well drained, moderately sloping to steep soils. The Luverne soil formed in clayey sediments, and the Smithdale soil formed in loamy deposits. This map unit is on rugged, hilly uplands that are dissected by a dendritic network of drainageways. Relief is moderate to high. The landscape is characterized by narrow, winding ridgetops above steep hillsides.

Because the present and predicted major land use is woodland, these soils were mapped together. Some areas consist mostly of the Luverne soil, some consist mostly of the Smithdale soil, and some consist of both kinds of soils. The Luverne soil makes up about 60 percent of the unit, The Smithdale soil makes up about 25 percent, and included soils make up about 15 percent. Individual areas range from about 50 to 300 acres in size. Onsite investigation is required to identify the location of each component. The Luverne soil is mainly on slopes that range from 5 to 45 percent, and the Smithdale soil is mainly on slopes that range from 8 to 45 percent.

The typical sequence, depth, and composition of the layers of the Luverne soil are as follows—

Surface layer:
0 to 4 inches, dark grayish brown fine sandy loam
Subsurface layer:
4 to 12 inches, yellowish brown fine sandy loam
Subsoil:
12 to 35 inches, yellowish red sandy clay that has red and light olive brown mottles
35 to 46 inches, red sandy clay loam
Underlying material:
46 to 59 inches, red sandy clay loam that has grayish brown and brown mottles
59 to 70 inches, yellowish red sandy clay loam
70 to 76 inches, yellowish red sandy clay loam that has lamellae of clay, very fine sandy loam, and silt loam

The typical sequence, depth, and composition of the layers of the Smithdale soil are as follows—

Surface layer:
0 to 2 inches, dark yellowish brown sandy loam
Subsurface layer:
2 to 14 inches, yellowish brown sandy loam
Subsoil:
14 to 36 inches, reddish brown sandy loam
36 to 50 inches, reddish brown sandy clay loam that has light yellowish brown mottles
50 to 60 inches, reddish brown sandy loam that has light yellowish brown and yellowish brown mottles

Included in mapping are Okeelala and Ruston soils and the moderately well drained Tippah soils. Okeelala soils, which have a thinner solum, are mainly on the steep hillsides. Ruston soils are on ridgetops. Tippah soils are on a few of the broader, gently sloping ridgetops. Also included are networks of deep, v-shaped gullies. Also included are some small areas of soils that are on ridgetops and have clayey solum overlying a sandy substratum. Some areas of soils that have irregularly bedded ironstone plates, ironstone fragments, and conglomerates and are mostly in areas of Smithdale soils on the narrow ridges are also included. The included areas make up about 15 percent of the map unit.

Important properties of Luverne and Smithdale soils—

Soil reaction: Luverne—extremely acid to strongly acid; Smithdale—very strongly acid or strongly acid, except in the surface layer of areas that have been limed
Permeability: Luverne—moderately slow; Smithdale—moderate
Available water capacity: High
Surface runoff: Medium to rapid
Erosion hazard: Moderate to severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: Luverne—somewhat restricted below a depth of 40 inches by the plastic, clayey subsoil; Smithdale—more than 60 inches
Shrink-swell potential: Luverne—moderate; Smithdale—low
Tilth: Fair to good, although most of the acreage of these soils should not be cultivated because of the severe hazard of erosion

Most of the acreage of this map unit is used as woodland (fig. 14).

Most areas of this map unit are not suited to truck crops, small grain, or row crops because of the slope, the rapid runoff rate, and the severe hazard of erosion. Except for small, gently sloping and moderately sloping areas on ridgetops, the soils should be kept in a permanent vegetative cover of grasses or trees to prevent further erosion.

This map unit is generally poorly suited to pasture and hay because of the slope. The slope hinders the use of equipment, and the soils are subject to severe erosion during seedbed preparation or when overgrazed. Some gently sloping and moderately sloping areas on the broader ridgetops are suited to hay and pasture. If this map unit is used for pasture, proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition. In most areas, the use of equipment is difficult because of the slope.

This map unit is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except in areas where management practices have favored a selected species. The trees preferred for planting include loblolly pine, sweetgum, and cherrybark oak. Erosion is the main management concern. Rills and gullies can develop from timber harvesting operations unless adequate water bars, plant cover, or both are provided. Avoiding the use of steep slopes for logging roads and skid trails helps to control erosion and minimizes the formation of gullies. The hazard of erosion and the use of equipment are moderate to severe limitations in areas that have slopes of more than 15 percent. Areas that have slopes of 15 to 35 percent have moderate limitations, and areas that have slopes of more than 35 percent have severe limitations. If pine trees are planted, plant competition is a management concern. Cutting and girdling eliminate unwanted brush or trees, and spraying with an

Figure 14.—An area of Luverne and Smithdale sandy loams, 5 to 45 percent slopes, used as woodland. This map unit is important to the timber industry because it is well suited to trees such as loblolly pine.

approved herbicide controls the subsequent growth and increases the seedling survival rate. The use of equipment is limited because the Luverne soil is sticky and plastic when wet, which restricts trafficability. This limitation can be partially overcome by logging during drier periods. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This map unit has fair potential as habitat for openland wildlife, good potential as habitat for woodland wildlife, and very poor potential as habitat for wetland wildlife.

The slope is the main limitation on sites for residential and small commercial buildings and for local roads. The low strength is a severe limitation on sites for local roads in areas of the Luverne soil. Although the limitations are difficult and expensive to overcome, they can be minimized by special design and engineering techniques and proper construction. The less sloping areas on ridgetops have fewer limitations than the areas on steep hillsides. Erosion is a hazard in steep areas that have been cleared for construction. However, designing roads and dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control

erosion. The slope and the moderately slow permeability in the clayey subsoil of the Luverne soil are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed and approved alternative system helps to overcome the limitations, or alternative sites can be used. The slope is a major management concern for septic tanks and subsurface waste-water disposal systems in most areas of the Smithdale soil. A few areas on shoulder slopes that have slopes of less than 15 percent have only slight limitations. Areas that have slopes of 15 to 30 percent have moderate limitations that can be mimimized by installing field lines on the contour. Areas that have slopes of more than 30 percent are generally unsuited to subsurface waste-water disposal systems because the effluent can surface in downslope areas and cause a pollution hazard.

The Luverne and Smithdale soils are in capability subclass VIIe and in woodland suitability group 8R.

Ma—Mantachie fine sandy loam, occasionally flooded. This nearly level, somewhat poorly drained soil formed in loamy alluvial sediments on flood plains. Most areas are subject to flooding following heavy, prolonged rains during winter and early spring, mainly before the planting season begins. The flooding lasts for a few hours in most areas near enlarged, deepened, or straightened constructed channels and for a few days near natural, winding channels or in low areas. Individual areas are long and narrow in shape, and they are along streams throughout the county. They range from 5 to 300 acres in size. Slopes generally are smooth to concave. They range from 0 to 2 percent. Most areas of this map unit are dissected by stream channels.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 9 inches, brown fine sandy loam that has strong brown mottles in the lower part

Subsoil:
9 to 17 inches, brown silt loam that has light brownish gray and yellowish brown mottles
17 to 34 inches, light brownish gray loam that has strong brown mottles
34 to 43 inches, light brownish gray loam that has yellowish brown and strong brown mottles

Underlying material:
43 to 60 inches, light brownish gray loam that has strong brown mottles

Included in mapping are small areas of Arkabutla, Bibb, Chenneby, Iuka, Kinston, Kirkville, and Rosebloom soils. Arkabutla and Chenneby soils have a higher content of silt and less sand than the Mantachie soil. They are in landscape positions similar to those of the Mantachie soil. The poorly drained Bibb, Kinston, and Rosebloom soils are in sloughs and drainageways. Rosebloom soils have less sand and a higher content of silt than the Mantachie soil. The moderately well drained Iuka and Kirkville soils are in small, convex areas and along incised channels in the slightly higher parts of the flood plain. Also included are some areas of soils that have a sandy and loamy overwash less than 20 inches thick and are mainly near steam channels. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Mantachie soil—

Soil reaction: Very strongly acid to strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 1.0 to 1.5 feet in winter and early spring
Flooding: Occasional, for very brief to brief periods during winter and early spring
Root zone: Deep, somewhat restricted by a seasonal high water table in winter and early spring
Shrink-swell potential: Low
Tilth: Good; can be worked throughout a wide range in moisture content

Most of the acreage of this Mantachie soil is used for row crops or pasture. A small acreage is used as woodland.

This soil is suited to row crops, small grain, and truck crops. The seasonal wetness and flooding are the main limitations. Proper row arrangement and surface field ditches can remove excess surface water in the lower areas. Returning crop residue to the soil improves soil tilth, reduces crusting, and helps to maintain fertility. Seedbed preparation and cultivation are sometimes delayed in spring because of wetness and flooding. Most of the flooding occurs in winter and early spring before crops are planted, but flooding can cause moderate damage to crops in low, unprotected areas after heavy rains in summer.

This soil is suited to pasture and hay crops that are tolerant of wetness (fig. 15). Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Restricting use during wet periods minimizes surface compaction. Proper stocking rates, controlled grazing,

Figure 15.—High-quality round bales of hay, produced in an area of Mantachie fine sandy loam, occasionally flooded.

and weed and brush control help to keep the pasture and soil in good condition. Flooding causes some damage to plants in the lower areas, and wetness can delay the growth of plants in spring.

This soil is well suited to woodland. Bottom-land hardwoods and pines that are tolerant of wetness and flooding are well suited, and these are the dominant trees in wooded areas. The trees preferred for planting include cherrybark oak, eastern cottonwood, sweetgum, green ash, and loblolly pine. The seasonal wetness is a moderate limitation for the use of equipment. Harvesting during the drier periods helps to overcome the problems caused by wetness. If pine trees are planted, plant competition is a severe limitation and the seedling mortality rate is a moderate limitation. Proper site preparation helps to control competition from undesirable plants and reduces the seedling mortality rate. Chopping, spraying with an approved herbicide, and cutting or girdling eliminate unwanted bushes or trees. The benefits of the mechanical site preparation do not extend beyond one growing season. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees. Limiting the use of heavy equipment to drier periods minimizes soil compaction and helps to prevent the formation of ruts.

This soil has good potential as habitat for openland and woodland wildlife. It has fair potential as habitat for wetland wildlife.

The flooding and wetness are severe limitations on sites for residential and small commercial buildings. Flooding is a major limitation on sites for local roads.

Special designs and proper engineering techniques help to overcome some of the limitations. Corrective measures to control flooding generally are not practical because of the cost. The flooding and wetness are severe limitations affecting septic tanks and subsurface waste-water disposal systems. Alternative sites can be selected.

This Mantachie soil is in capability subclass IIw and in woodland suitability group 10W.

Mr—Marietta fine sandy loam, occasionally flooded. This nearly level, moderately well drained soil formed in loamy alluvium on flood plains. Most areas are subject to flooding following heavy, prolonged rains during winter and early spring, generally before crops are planted. Most areas are near enlarged, deepened, or straightened constructed channels, and the flooding lasts for only a few hours. However, the flooding can last for several days in areas near natural channels or in low areas. Individual areas range from 5 to 60 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 6 inches, dark yellowish brown fine sandy loam

Subsoil:
- 6 to 10 inches, dark yellowish brown loam
- 10 to 18 inches, brown sandy clay loam that has light brownish gray mottles
- 18 to 28 inches, brown sandy clay loam that has light brownish gray mottles
- 28 to 46 inches, mottled light brownish gray and dark brown sandy clay loam

Underlying material:
- 46 to 60 inches, light brownish gray sandy clay loam that has dark brown mottles

Included in mapping are small areas of the somewhat poorly drained Catalpa soils and the Leeper soils. Catalpa soils are mainly in areas on the flood plain below hillslopes that have outcrops of chalk. Leeper soils are in broad, slightly lower areas farther away from the channel than the Marietta soil. Also included are small areas of soils that are on flood plains and are clayey within a depth of 18 inches; some areas of soils that have recent loamy overwash less than 20 inches thick; and a few areas of soils that are in sloughs and are frequently flooded for long periods. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Marietta soil—

Soil reaction: Moderately acid to slightly alkaline throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 1.5 to 2.0 feet during wet seasons
Flooding: Occasional, for very brief to brief periods during winter and early spring
Root zone: Deep; somewhat restricted by a seasonal high water table in winter and early spring
Shrink-swell potential: Low
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content. It tends to crust and pack after hard rains if it is bare.

Most areas of this Marietta soil are used for row crops or pasture. A small acreage is used as woodland.

This soil is well suited to row crops, small grain, and truck crops. With the use of good management practices, row crops can be grown every year (fig. 16). Seasonal wetness is the main limitation. Proper row arrangement and surface field ditches can remove excess surface water from low areas. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting. Seedbed preparation and cultivation are sometimes delayed in spring because of wetness and flooding. Most of the flooding occurs in winter and early spring before crops are planted, but flooding can cause damage to crops during occasional wet periods.

This soil is well suited to pasture and hay. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition. Restricting use during wet periods minimizes surface compaction.

This soil is well suited to woodland. Most bottom-land hardwoods and pines that are tolerant of some wetness are well suited to this soil, and these are the dominant native trees. The trees preferred for planting include cherrybark oak, eastern cottonwood, Nuttall oak, sweetgum, water oak, and yellow-poplar. The seedling mortality rate and the equipment limitation are moderate management concerns. Plant competition is a severe limitation for establishing pine trees. If pine trees are planted, it can be controlled by using mechanical site preparation; cutting brush, weeds, and sprouts; and girdling hardwoods. The benefits of the site preparation do not extend beyond one growing season. Applications of an approved herbicide help to control plant competition and establish seedlings. Natural regeneration of hardwood species is probable in all openings of one-half acre or larger. Hardwood timber stands can be improved by leaving preferred trees for

Figure 16.—An excellent stand of cotton, which is ready to be harvested, in an area of Marietta fine sandy loam, occasionally flooded.

seed production and removing unwanted trees. During rainy periods, wetness hinders the conventional use of equipment for planting and harvesting. Harvesting timber during the drier periods in summer and fall helps to prevent the formation of ruts and minimizes soil compaction.

This soil has good potential as habitat for openland and woodland wildlife. It has poor potential as habitat for wetland wildlife.

Flooding is a severe limitation on sites for residential and small commercial buildings and for local roads. Flood-control measures generally are not practical because of the high cost and some risk of damage to the property after the measures are applied. However, some special designs and proper engineering techniques, especially for local roads, help to minimize the damage from flooding. The flooding and wetness are severe limitations affecting septic tanks and subsurface waste-water disposal systems. Alternative sites can be selected.

This Marietta soil is in capability subclass IIw and in woodland suitability group 10W.

My—Myatt silt loam, frequently flooded. This nearly level, poorly drained soil formed in loamy sediments on broad terraces and along some drainageways in the uplands. It is subject to flooding, generally from November through March in most years. However, flooding can occur at any time following heavy rains. The flooding lasts for several days in areas near enlarged channels and for longer periods in areas along natural, winding channels. Individual areas are somewhat oval in shape. They range from 5 to 10 acres in size. Slopes generally are smooth to concave.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 3 inches, very dark grayish brown silt loam
Subsurface layer:
3 to 8 inches, grayish brown silt loam
Subsoil:
8 to 22 inches, light brownish gray loam that has strong brown mottles
22 to 45 inches, gray clay loam that has yellow mottles
Underlying material:
45 to 60 inches, gray clay loam that has yellow mottles

Included in mapping are small areas of the somewhat poorly drained Quitman soils and the moderately well drained Savannah soils. Quitman and Savannah soils are on low knolls and on the edges of the mapped areas. Also included are a few small areas of soils that are in low depressions and are ponded except during prolonged droughts. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Myatt soil—

Soil reaction: Very strongly acid or strongly acid in the surface layer, subsurface layer, and upper part of the subsoil, except in the surface layer of areas that have been limed; extremely acid to strongly acid in the lower part of the solum and the underlying material
Permeability: Moderate to moderately slow
Available water capacity: High
Surface runoff: Slow to very slow; water stands in low areas after heavy rainfalls
Erosion hazard: Slight
Seasonal high water table: At or within a depth of 1.0 foot during winter and early spring
Flooding: Frequently flooded to a depth of one foot or more for brief to long periods during winter and early spring
Root zone: Deep; somewhat restricted by a seasonal high water table that is near the surface during winter and early spring
Tilth: Fair; the surface layer is wet for long periods during winter and early spring.
Shrink-swell potential: Low

Most of the acreage of the Myatt soil is used as woodland or pasture.

This soil is poorly suited to row crops. The frequent flooding and the seasonal wetness are the main limitations. Although flooding generally occurs during winter and spring before the crops are planted, some crop damage can result from heavy rainfalls in summer and fall. The soil has low productivity resulting from the seasonal wetness that slows the movement of water and air through the soil and restricts the development, and penetration of plant roots. During dry periods in summer and fall, the crops are likely to be damaged by a lack of water because of the shallow, underdeveloped root system. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting and packing. Surface field ditches and proper row arrangement can remove excess surface water. Regulations that apply to drainage systems should be checked before initiating drainage work.

This soil is suited to pasture and hay crops that are tolerant of wetness. Drainage ditches help to remove surface water during the growing season, but plant stands can be damaged or destroyed by flooding early in the growing season. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Bottom-land hardwoods with intermingled stands of swamp hardwoods in lower areas are the dominant trees. The trees preferred for planting include green ash, loblolly pine, eastern cottonwood, and sweetgum. Flooding and wetness are the main management concerns. The use of equipment is severely limited because of the wetness and flooding. Plant competition and seedling mortality are also severe limitations. Unless the trees are planted on bedded rows, only those trees that can tolerate seasonal wetness should be planted. If pine trees are planted, site preparation, including chopping, helps to control competition from undesirable plants. Planting pine trees on bedded rows lowers the effective depth of the water table. The seedling mortality resulting from flooding is reduced by planting late in the spring, after flooding becomes less likely. Increasing the planting rate helps to establish pines. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees. Using heavy equipment when the soil is wet causes rutting and soil compaction. The seasonal high water table restricts the use of equipment to dry periods.

This soil has fair potential as habitat for openland and woodland wildlife. It has good potential as habitat for wetland wildlife.

This soil is not suited as a site for residential or small commercial buildings or for septic tanks or subsurface waste-water disposal systems because of the wetness and frequent flooding. Flood-control measures generally are not practical because of the high cost. Special designs and proper construction help to overcome the limitations. The moderate to moderately slow

permeability is also a severe limitation for septic tanks and subsurface waste-water disposal systems. Alternative sites can be selected.

This Myatt soil is in capability subclass Vw and in woodland suitability group 9W.

OkD3—Okeelala fine sandy loam, 8 to 12 percent slopes, severely eroded. This well drained, strongly sloping soil formed in loamy Coastal Plain sediments on hillslopes in the uplands. Individual areas are elongated on hillsides. They range from 5 to 50 acres in size. Slopes generally are long and dissected by well defined drainageways.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 2 inches, brown fine sandy loam mixed with a small amount of yellowish red subsoil material
Subsoil:
2 to 14 inches, yellowish red clay loam
14 to 24 inches, yellowish red sandy clay loam that has red mottles
24 to 46 inches, yellowish red sandy clay loam that has red mottles
Underlying material:
46 to 60 inches, red loamy fine sand that has light brown and light reddish brown mottles

In most areas, much of the original surface layer has been removed by erosion and tillage has mixed the surface layer with the surface soil and subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Rills and shallow gullies are common. In some places, deep, v-shaped gullies occur.

Included in mapping are small areas of Luverne, Ruston, and Smithdale soils. Luverne soils have a higher content of clay in the solum than the Okeelala soil, and Ruston and Smithdale soils are not as sandy in the lower part of the solum. Luverne and Smithdale soils are in landscape positions similar to those of the Okeelala soil, and Ruston soils are on less sloping areas on ridgetops. Also included are small areas of soils that are more than 60 inches deep over loamy sand or sand; areas of soils that have thin, discontinuous ironstone plates, iron-cemented chert gravel conglomerates, and ironstone fragments; and small areas of Okeelala soils that have slopes of more than 12 percent. These included areas make up about 10 to 15 percent of the map unit.

Important properties of the Okeelala soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate in the upper part of the subsoil, moderately rapid in the lower part
Available water capacity: Moderate
Surface runoff: Medium to rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Effective root zone: 60 inches or more
Shrink-swell potential: Low

Most of the acreage of this Okeelala soil is used as woodland or pasture.

This soil is poorly suited to row crops because of the severe hazard of erosion. If cultivated, the soil requires intensive conservation practices, including conservation tillage, contour farming, a crop rotation that includes grasses and legumes, cover crops, vegetated filter strips, grassed waterways and outlets, and crop residue management.

This soil is suited to pasture and hay. The slope, the hazard of erosion, and the moderate available water capacity are the main limitations for growing grasses and legumes. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas contain a mixture of hardwoods and pine trees, except where management practices have favored selected species. The soil has few limitations for forest management. The trees preferred for planting include loblolly pine and southern red oak. Special site preparation practices, such as harrowing and chopping, control the immediate plant competition and facilitate mechanical planting. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

The slope is a moderate limitation on sites for residential buildings and local roads. It is a severe limitation on sites for small commercial buildings. Special designs and proper engineering techniques help to overcome the limitation. Erosion is a hazard in areas that have been cleared for construction. However, designing dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The slope is a moderate limitation for septic tanks and subsurface waste-water disposal systems. It can be

minimized by installing field lines on the contour.

This Okeelala soil is in capability subclass VIe and in woodland suitability group 8A.

OLS—Okeelala, Luverne, and Smithdale soils, 5 to 45 percent slopes. This map unit consists of well drained, sloping to steep soils. The Okeelala and Smithdale soils formed in loamy sediments, and the Luverne soil formed in clayey sediments. This map unit is on steep, dissected hillslopes and narrow, winding ridgetops in rugged, hilly areas in the central part of the county. Although the present and predicted major land use of this map unit is woodland, many areas of these soils, especially those in less sloping areas on ridges, had once been cleared for use as cropland or pasture. They were later abandoned and reverted to woodland. The slope is the major factor in determining the use and management of this unit for most types of land uses.

Because this map unit is used almost entirely as woodland, these soils were mapped together. Individual areas of this map unit range from 50 to 1,000 acres in size. Some areas consist mostly of the Okeelala soil, some consist mostly of the Luverne soil, some consist mostly of the Smithdale soil, and many areas consist of a mixture of all the soils. The Okeelala soil makes up about 35 percent of the unit, the Luverne soil makes up about 30 percent, the Smithdale soil makes up about 20 percent, and included soils make up about 15 percent. Onsite investigation is required to identify the location of each component.

The typical sequence, depth, and composition of the layers of the Okeelala soil are as follows—

Surface layer:
0 to 3 inches, brown sandy loam
Subsurface layer:
3 to 11 inches, yellowish brown loamy sand
Subsoil:
11 to 22 inches, yellowish red sandy clay loam that has reddish brown mottles
22 to 34 inches, red sandy clay loam
34 to 48 inches, yellowish red sandy clay loam that has strong brown mottles
Underlying material:
48 to 62 inches, yellowish red sandy loam that has strong brown mottles
62 to 82 inches, intermingled yellowish red and yellowish brown sandy loam

The typical sequence, depth, and composition of the layers of the Luverne soil are as follows—

Surface layer:
0 to 4 inches, dark grayish brown fine sandy loam
Subsurface layer:
4 to 12 inches, yellowish brown fine sandy loam
Subsoil:
12 to 35 inches, yellowish red sandy clay that has red and light olive brown mottles
35 to 46 inches, red sandy clay loam
Underlying material:
46 to 59 inches, red sandy clay loam that has grayish brown and brown mottles
59 to 70 inches, yellowish red sandy clay loam
70 to 76 inches, yellowish red sandy clay loam that has lamellae of clay, very fine sandy loam, and silt loam

The typical sequence, depth, and composition of the layers of the Smithdale soil are as follows—

Surface layer:
0 to 3 inches, brown fine sandy loam
Subsurface layer:
3 to 14 inches, yellowish brown sandy loam
Subsoil:
14 to 36 inches, yellowish red sandy clay loam
36 to 60 inches, yellowish red sandy loam that has brownish yellow mottles
60 to 65 inches, yellowish red sandy loam that has yellowish brown mottles

Included in mapping are Kirkville, Mantachie, Ruston, and Savannah soils. The moderately well drained Kirkville soils and the somewhat poorly drained Mantachie soils are on narrow flood plains that border secondary channels in drainageways. Ruston soils and the moderately well drained Savannah soils, which have a fragipan, are on gently sloping and moderately sloping crests of the broader ridges and hilltops. Also included are networks of shallow to deep, v-shaped gullies that vary in size. Also included are soils that are on ridgetops and have a clayey solum overlying a sandy substratum and some areas of soils that have layers of ironstone plates, iron-cemented chert gravel conglomerates, and ironstone fragments. The included soils make up about 15 percent of the map unit.

Important properties of Okeelala, Luverne, and Smithdale soils—

Soil reaction: Okeelala and Smithdale—very strongly acid or strongly acid, except in the surface layer of areas that have been limed; Luverne—extremely acid to strongly acid, except in the surface layer of areas that have been limed
Permeability: Okeelala and Smithdale—moderate; Luverne—moderately slow
Available water capacity: Okeelala and Luverne—moderate; Smithdale—high
Surface runoff: Medium to very rapid

Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: Okeelala and Smithdale—more than 60 inches; Luverne—somewhat restricted by the plastic, clayey subsoil
Shrink-swell potential: Okeelala and Smithdale—low; Luverne—moderate
Tilth: Fair, although these soils should not be cultivated because of the severe hazard of erosion

Most of the acreage in this map unit is used as woodland. A small acreage is used to grow grasses and legumes for hay and pasture.

This map unit is generally not suited to growing row crops, truck crops, and small grain because of the slope. The hazard of erosion is severe. Establishing permanent vegetation, especially trees, helps to control erosion. Plants can be grown for pasture or hay in moderately sloping areas on ridgetops. Maintaining a good cover of grass at all times helps to control erosion. Proper stocking rates, controlled grazing, and weed and brush control reduce the runoff rate and the hazard of erosion.

This map unit is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored selected species. The trees preferred for planting include cherrybark oak, sweetgum, southern red oak, and loblolly pine. Because of the slope, the hazard of erosion and the use of equipment are moderate limitations in this map unit. Plant competition is a moderate management concern in areas of the Luverne soil. The hazard of erosion can be minimized by avoiding the removal of leaf litter and the formation of ruts while harvesting timber and allowing vegetation to reestablish quickly. Gullies can form along logging roads on steep slopes; therefore, roads should follow the contour of the slope if possible. Roads and log landings can be protected against erosion by constructing diversions and by seeding protective vegetation on cuts and fills. Access roads that are no longer needed can be seeded or closed to prevent excessive erosion. Plant competition is moderate. Careful management practices, such as spraying with an approved herbicide after reforestation, reduce competition from undesirable understory plants. Conventional methods of harvesting trees can be used in most areas, but they are more difficult to use in the steeper areas. If pine trees are planted, site preparation helps to control competition from undesirable plants. Cutting weeds or brush and girdling trees also eliminates undesirable plants. Applications of an approved herbicide control unwanted vegetation while seedlings become established. Natural regeneration of hardwood species is probable because of the hardwood root systems that sprout profusely in the spring and summer. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This map unit has fair potential as habitat for openland wildlife, good potential as habitat for woodland wildlife, and very poor potential as habitat for wetland wildlife.

Most areas of this map unit have severe limitations for use as residential and small commercial building sites or for local roads. The slope is the main limitation. However, some less sloping areas on ridgetops are suited as sites for residential buildings. The low strength in areas of the Luverne soil is a severe limitation for local roads. Erosion is a hazard in steep areas that have been cleared for construction. However, designing roads and dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The slope on hillsides is a severe limitation for septic tanks and subsurface waste-water disposal fields. It can be partially overcome in areas of the Okeelala and Smithdale soils that have slopes of 15 and 30 percent by installing field lines on the contour or by land shaping and installing field lines across the slope. Areas that have slopes of more than 30 percent require an approved alternative system. In steep areas, effluent from subsurface systems can seep from the surface on downslope grades and cause a pollution hazard. In areas of the Okeelala and Smithdale soils that have slopes of less than 15 percent, mainly on ridges, properly designed and installed subsurface disposal systems generally are satisfactory. The moderately slow permeability is a severe limitation in all areas of the Luverne soil. Onsite investigation is required to identify the location of each component.

The Okeelala, Luverne, and Smithdale soils are in capability subclass VIIe and in woodland suitability group 8R.

ORL—Okeelala, Ruston, and Luverne fine sandy loams, 3 to 8 percent slopes, severely eroded. This map unit consists of well drained, gently sloping to moderately sloping soils. The Okeelala and Ruston soils formed in loamy sediments, and the Luverne soil formed in clayey sediments. This map unit is on narrow, winding ridges in the hilly uplands in the south-central part of the county.

Most areas of the map unit are used for woodland. Many areas of these soils, especially those on less

sloping, wider ridgetops, had once been cleared for use as cropland or pasture. They were later later abandoned and reverted to woodland. Because woodland is the present and predicted land use, these soils were mapped together. Onsite investigation is required to develop soil interpretations for all uses except woodland management. Okeelala soils make up about 35 percent of the map unit, Ruston soils make up about 25 percent, Luverne soils make up about 20 percent, and included soils make up about 20 percent. Individual areas range from 5 to 50 acres in size.

The typical sequence, depth, and composition of the layers of the Okeelala soil are as follows—

Surface layer:
0 to 2 inches, brown fine sandy loam mixed with a small amount of yellowish red subsoil material

Subsoil:
2 to 14 inches, yellowish red clay loam
14 to 24 inches, yellowish red sandy clay loam that has red mottles
24 to 46 inches, yellowish red sandy loam that has red mottles

Underlying material:
46 to 60 inches, red loamy sand that has light brown and pinkish gray mottles

The typical sequence, depth, and composition of the layers of the Ruston soil are as follows—

Surface layer:
0 to 3 inches, brown fine sandy loam that has a few pockets of yellowish red clay loam subsoil material

Subsoil:
3 to 11 inches, yellowish red clay loam
11 to 26 inches, red sandy clay loam that has yellowish brown mottles
26 to 44 inches, red fine sandy loam that has pockets of light yellowish brown loamy sand
44 to 54 inches, red sandy clay loam that has yellowish brown and pale brown mottles
54 to 60 inches, red sandy clay loam that has yellowish brown mottles

The typical sequence, depth, and composition of the layers of the Luverne soil are as follows—

Surface layer:
0 to 2 inches, dark yellowish brown fine sandy loam mixed with some yellowish red subsoil material

Subsoil:
2 to 32 inches, yellowish red sandy clay
32 to 45 inches, yellowish red sandy clay that has pale brown and red mottles

Underlying material:
45 to 60 inches, mottled red, strong brown, and light brownish gray sandy clay loam that has thin strata of loamy material

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of the moderately well drained Savannah soils. They have a fragipan and are on the smoother slopes of broader ridgetops. Also included are small areas of soils that are mainly on ridgetops and have a clayey subsoil overlying a sandy substratum. The included soils make up about 25 percent of the map unit.

Important properties of Okeelala, Ruston, and Luverne soils—

Soil reaction: Okeelala—very strongly acid or strongly acid, except in the surface layer of areas that have been limed; Ruston—very strongly acid or strongly acid, except in the surface layer of areas that have been limed; Luverne—extremely acid to strongly acid, except in the surface layer of areas that have been limed
Permeability: Okeelala and Ruston—moderate; Luverne—moderately slow
Available water capacity: High
Surface runoff: Medium
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: Okeelala and Ruston—60 inches or more; Luverne—somewhat restricted by the plastic, clayey subsoil
Shrink-swell potential: Okeelala and Ruston—low; Luverne—moderate
Tilth: Okeelala and Ruston—good; Luverne—fair

Most of the acreage of this map unit is used as woodland. A few areas are used for pasture and truck crops.

This map unit is poorly suited to row crops, truck crops, and small grain. The hazard of erosion is severe, and the production potential is a limitation. Conservation tillage, grassed waterways, terracing, contour stripcropping, terraces, and contour farming help to control erosion in cultivated areas. Crop rotation increases the content of organic matter and improves the utilization of moisture. Returning crop residue to the

soil improves soil fertility and tilth and reduces crusting and packing after hard rains.

This map unit is suited to pasture and hay. Using areas of this map unit for hay and pasture helps to control erosion. Controlling grazing when the soil is too wet helps to reduce surface compaction. Proper stocking rates, controlled grazing during wet periods, and weed and brush control help to keep the soil and pasture in good condition.

This map unit is well suited to woodland. It has few limitations for use and management. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored a selected species. The map unit is well suited to a variety of trees. The trees preferred for planting include white oak, cherrybark oak, and loblolly pine. If pine trees are planted, plant competition is a management concern. Mechanical site preparation helps to control undesirable plants and reduces the seedling mortality rate. Applications of an approved herbicide help to control the competing vegetation while seedlings become established. Harvesting timber during drier periods helps to prevent the formation of ruts and minimizes soil compaction, especially in areas of the Luverne soil, which is plastic and sticky when wet and has poor trafficability. Management practices that minimize the hazard of erosion are beneficial during timber harvesting. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This map unit has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

Many areas of this map unit are well suited as sites for residential or small commercial buildings. The shrink-swell potential is a moderate limitation for building site development in areas of the Luverne soil. Areas that have slopes of 5 to 8 percent have moderate limitations as sites for small commercial buildings. The low strength is a severe limitation on sites for local roads in areas of the Luverne soil. Special designs help to overcome these limitations. Erosion is a management concern in areas that have been cleared for construction. Revegetating the construction area helps to control erosion. In areas of the Okeelala and Smithdale soils, properly designed and installed septic tanks and subsurface waste-water disposal systems generally are satisfactory. The moderately slow permeability in the clayey subsoil of the Luverne soil is a severe limitation for septic tanks and subsurface waste-water disposal systems. In areas of the Luverne soil, a specially designed alternative system helps to overcome the limitations, or alternative sites can be used.

The Okeelala soil is in capability subclass IVe and in woodland suitability group 8A. The Ruston soil is in capability subclass IVe and in woodland suitability group 8A. The Luverne soil is in capability subclass IVe and in woodland suitability group 8C.

Pa—Pits-Udorthents complex. This miscellaneous area consists of gravel pits, sand pits, borrow pits, piles of spoil, and heaps of soil material mixed with gravel. These areas are throughout the county. The pits are open excavations from which soil, gravel, and sand have been removed. The depth to sand and gravel generally ranges from 2 to 20 feet or more. Some pits were partially filled with spoil material, smoothed, and seeded with grass or planted with pine trees. The composition of the unit is variable. Areas of open pits make up 50 to more than 75 percent of the map unit.

Gravel and sand pits are pits from which gravelly or sandy material has been excavated for use in other locations. Some pits have a high content of clay, and the material is locally called "clay gravel." In places, the strata that contain the gravel are many feet thick.

Udorthents are piles of spoil material of varying depth and composition. Some of the pits were abandoned and were later filled with spoil material, smoothed, and planted with trees or grass. Udorthents consist of a mixture of the soil overburden and the underlying geologic deposits. They have a diverse textural composition that ranges from clay to gravel. In the western part of the county, the soil material is mainly loess. In the central and eastern parts of the county, it has a high content of sand and some gravel.

Some abandoned pits are reverting to woodland. A few places contain a good stand of pine trees.

In many of the inactive open pits, the soil material supports a sparse growth of native vegetation consisting mainly of pines, hardwoods, and understory vegetation. Most of the vegetation is useful, as it helps to control erosion and provides habitat for some kinds of wildlife, especially songbirds. Many acres in the map unit are barren.

This map unit is not suited to cropland, pasture, or woodland. It has moderate to severe limitations for most urban uses. Some areas are suitable for recreational activities such as the operation of offroad recreational vehicles. Some areas have been used for depositing rubbish.

This unit is not assigned to a capability subclass or a woodland suitability group.

PdA—Providence silt loam, 0 to 2 percent slopes. This moderately well drained soil has a fragipan. It formed in a thin mantle of loess and the underlying loamy material. It is nearly level and is on ridgetops in

the uplands and on terraces. Individual areas range from wide and long to somewhat oval in shape. They are 5 to more than 20 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 8 inches, dark yellowish brown silt loam
Subsoil:
8 to 20 inches, yellowish brown silt loam
20 to 60 inches, a compact and brittle fragipan that is mottled in shades of brown and gray and is silt loam in the upper part and clay loam in the lower part

Included in mapping are small areas of Guyton, Savannah, and Tippah soils. The poorly drained Guyton soils are in drainageways and depressions. Savannah soils, which have a fragipan, have a higher content of sand in the solum than the Providence soil. They are in landscape positions similar to those of the Providence soil. Tippah soils do not have a fragipan. They are also in landscape positions similar to those of the Providence soil. The included areas make up about 15 percent of the map unit.

Important properties of the Providence soil—

Soil reaction: Very strongly acid or moderately acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate in the surface layer and upper part of the subsoil, moderately slow through the fragipan
Available water capacity: Moderate
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet during wet seasons. The fragipan also restricts the rooting depth and limits the amount of water available to plants.
Flooding: None
Root zone: Somewhat restricted by a compact, brittle fragipan at a depth of about 1.5 feet
Shrink-swell potential: Low
Tilth: Good. This soil can be worked throughout a wide range of moisture conditions, but the surface layer tends to crust and pack after hard rains. A plow pan forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the plow pan.

Most areas of this Providence soil are used as cropland or pasture. A small acreage is used as woodland.

This soil is well suited to a variety of row crops, truck crops, and small grain. Seasonal wetness is the main limitation. The moderate depth of root zone and the moderate available water capacity are also management concerns. Proper row arrangement and surface field ditches help to control wetness in cultivated areas. A crop rotation that includes grasses and legumes increases the content of organic matter and improves the utilization of moisture by the soil. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting and packing.

This soil is well suited to pasture and hay. Using this soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management has favored a selected species. The trees preferred for planting include sweetgum, loblolly pine, and Shumard oak. The main management concern is plant competition, which is a severe limitation if pine trees are planted. If pine trees are planted, using mechanical site preparation, cutting, and girdling help to control undesirable plants. Spraying with an approved herbicide helps to control the subsequent growth and increases the seedling survival rate. Using special equipment and logging during the drier seasons help to prevent the formation of ruts and minimize soil compaction. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

This soil has moderate limitations on sites for residential and small commercial buildings because of wetness. The wetness is caused by the water table, which is perched above the fragipan during wet seasons. The low strength is a severe limitation on sites for local roads. Special designs and proper engineering techniques help to overcome some of these limitations. The wetness and the moderately slow permeability in the fragipan are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed subsurface waste-water disposal system or an alternative system helps to overcome the limitations.

This Providence soil is in capability subclass IIw and in woodland suitability group 8W.

PdB2—Providence silt loam, 2 to 5 percent slopes, eroded. This moderately well drained soil has a fragipan. It formed in a thin mantle of loess and the

underlying loamy material. It is gently sloping and is on ridgetops in the uplands and on terraces. Individual areas range from long and narrow to somewhat oval in shape. They are 5 to more than 30 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 6 inches, dark yellowish brown silt loam that has a small amount of strong brown subsoil material

Subsoil:
- 6 to 19 inches, strong brown silt loam
- 19 to 26 inches, a firm, compact, and brittle fragipan that is yellowish brown silt loam and has light yellowish brown and light brownish gray mottles
- 26 to 38 inches, a firm, compact, and brittle fragipan that is mottled strong brown and light brownish gray silt loam
- 38 to 50 inches, yellowish red loam that has yellowish brown mottles
- 50 to 60 inches, red clay loam that has yellowish brown mottles

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. Some areas have a few rills and shallow gullies.

Included in mapping are small areas of Savannah and Tippah soils. Savannah soils have a fragipan. They have a higher content of sand in the solum than the Providence soil. Tippah soils do not have a fragipan. They are in landscape positions similar to those of the Providence soil. Also included are somewhat poorly drained soils in depressions. The included soils make up about 15 percent of the map unit.

Important properties of the Providence soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate in the surface layer and upper part of the subsoil, moderately slow through the fragipan
Available water capacity: Moderate
Surface runoff: Medium
Erosion hazard: Moderate
Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet during wet seasons. The fragipan also restricts the rooting depth and limits the amount of water available to plants.
Flooding: None
Root zone: Somewhat restricted by a compact, brittle fragipan at a depth of about 1.5 feet
Shrink-swell potential: Low
Tilth: Good. This soil can be worked throughout a wide range of moisture conditions, but the surface layer tends to crust and pack after hard rains. A plow pan forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the plow pan.

Most areas of this Providence soil are used as cropland or pasture. A small acreage is used as woodland.

This soil is well suited to a variety of row crops, truck crops, and small grain. The hazard of erosion is a major management concern. The seasonal wetness, the moderate depth of root zone, and the moderate available water capacity are also management concerns. Conservation tillage, terraces, grassed waterways, and contour farming help to control erosion in cultivated areas. Crop rotation increases the content of organic matter and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is well suited to pasture and hay (fig. 17). Using this soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored selected species. The trees preferred for planting include sweetgum, loblolly pine, and Shumard oak. If pine trees are planted, plant competition is a severe limitation. If pine trees are planted, using mechanical site preparation, cutting, and girdling help to control undesirable plants, and spraying with an approved herbicide controls the subsequent growth. Logging during the drier periods helps to prevent the formation of ruts and minimizes soil compaction. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

The wetness is a moderate limitation on sites for residential and small commercial buildings. It is caused by the perched water table during wet seasons. The low strength is a severe limitation on sites for local roads. Special designs and proper engineering techniques help to overcome some of these limitations. The seasonal wetness and the moderately slow permeability in the

Figure 17.—Good-quality bermudagrass, produced in an area of Providence silt loam, 2 to 5 percent slopes, eroded.

fragipan are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed subsurface waste-water disposal system or an alternative system helps to overcome the limitations.

This Providence soil is in capability subclass IIe and in woodland suitability group 8W.

PdC3—Providence silt loam, 5 to 8 percent slopes, severely eroded. This moderately well drained soil has a fragipan. It formed in a thin mantle of loess and the underlying loamy deposits. It is moderately sloping and is on ridgetops, on terraces, and along the side slopes of drainageways. Individual areas generally are long and narrow to somewhat oval in shape. They are 5 to more than 20 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 3 inches, dark yellowish brown silt loam that has a mixture of strong brown silty clay loam subsoil material

Subsoil:

3 to 18 inches, strong brown silty clay loam

18 to 38 inches, a firm, compact, and brittle fragipan that is yellowish brown silt loam and has yellowish red, light brownish gray, and olive yellow mottles

38 to 50 inches, mottled red, light brownish gray, and olive yellow silt loam

50 to 60 inches, light brownish gray clay loam that has mottles of gray and olive yellow

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas

the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have a few rills and shallow gullies.

Included in mapping are small areas of Savannah and Tippah soils. These soils are in landscape positions similar to those of the Providence soil. Savannah soils have a fragipan. They have a higher content of sand in the solum than the Providence soil. Tippah soils do not have a fragipan. The included soils make up about 15 percent of the map unit.

Important properties of the Providence soil—

Soil reaction: Very strongly acid or moderately acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate in the surface layer and upper part of the subsoil, moderately slow through the fragipan
Available water capacity: Moderate
Surface runoff: Medium to rapid
Erosion hazard: Severe
Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet during wet seasons
Flooding: None
Root zone: Somewhat restricted by a compact, brittle fragipan in the subsoil at a depth of about 1.5 feet or less
Shrink-swell potential: Low
Tilth: Good. This soil can be worked throughout a wide range of moisture conditions, but the surface layer tends to crust and pack after hard rains. A plow pan forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the plow pan.

Most areas of this Providence soil are used as pasture and cropland. A small acreage is used as woodland.

This severely eroded soil is poorly suited to row crops, truck crops, and small grain. The hazard of erosion is the major management concern. The shallow rooting depth over the fragipan, the moderate available water capacity, and the seasonal wetness resulting from a perched water table during wet seasons are also management concerns. Conservation tillage, cover crops, grassed waterways, terraces, contour stripcropping, vegetated filter strips, and contour farming help to control erosion in cultivated areas. Crop rotation helps to control erosion, increases the content of organic matter, and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is well suited to pasture and hay. Using this soil for hay and pasture also helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control can help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored selected kinds of trees. The trees preferred for planting include sweetgum, loblolly pine, and Shumard oak. If pine trees are planted, plant competition is a severe limitation. If pine trees are planted, using mechanical preparation, cutting, and girdling help to control undesirable plants. Applications of an approved herbicide help to control competing vegetation and increase the seedling survival rate. The hazard of erosion is moderate. Maintaining the plant cover helps to control erosion. Using equipment during the drier seasons helps to prevent the formation of ruts and minimizes soil compaction. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

This soil is moderately suited as a site for residential and small commercial buildings. The seasonal wetness is a moderate limitation on sites for residential buildings, and the wetness and the slope are moderate limitations on sites for small commercial buildings. The low strength is a severe limitation on sites for local roads. Special designs and proper construction help to overcome the limitations. Erosion is a management concern in areas that have been cleared for construction. Revegetating the construction area helps to control erosion. The moderately slow permeability in the fragipan and the seasonal wetness are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed subsurface waste-water disposal system or an alternative system helps to overcome these limitations.

This Providence soil is in capability subclass IVe and in woodland suitability group 8W.

PdD3—Providence silt loam, 8 to 12 percent slopes, severely eroded. This moderately well drained soil has a fragipan. It formed in a thin mantle of loess and the underlying loamy deposits. It is strongly sloping and is on upland side slopes and terraces. Individual areas range from long and narrow to somewhat oval in shape. They are 5 to more than 20 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 3 inches, dark yellowish brown silt loam that

has a mixture of strong brown silty clay loam subsoil material

Subsoil:

3 to 18 inches, strong brown silty clay loam

18 to 38 inches, a firm, compact, and brittle fragipan that is yellowish brown silt loam and has yellowish red, light brownish gray, and olive yellow mottles

38 to 50 inches, mottled red, light brownish gray, and olive yellow silt loam

50 to 60 inches, light brownish gray clay loam that has mottles of gray and olive yellow

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of Tippah soils, which do not have a fragipan. They are in landscape positions similar to those of the Providence soil. Also included are some areas of soils that are in broad drainageways and have recent deposits of silty and sandy overwash. Gullied areas along the upper reaches of some drainageways are also included. The included areas make up about 15 percent of the map unit.

Important properties of the Providence soil—

Soil reaction: Very strongly acid or moderately acid throughout the profile, except in the surface layer of areas that have been limed

Permeability: Moderate in the surface layer and upper part of the subsoil, moderately slow through the fragipan

Available water capacity: Moderate

Surface runoff: Rapid

Erosion hazard: Severe

Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet during wet seasons. The fragipan also restricts the rooting depth and limits the amount of water available to plants.

Flooding: None

Root zone: Somewhat restricted by a compact, brittle fragipan at a depth of about 1.5 feet

Shrink-swell potential: Low

Tilth: Good. This soil can be worked throughout a wide range of moisture conditions, but the surface layer tends to crust and pack after hard rains. A plow pan forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the plow pan.

Most areas of this Providence soil are used as pasture. A small acreage is used as woodland or cropland.

This soil is poorly suited to row crops, truck crops, and small grain. The hazard of erosion is the major management concern. The slope, the moderate depth of the root zone, the moderate available water capacity, the low productivity, and the seasonal wetness are also management concerns. Conservation tillage, cover crops, grassed waterways, terraces, contour stripcropping, vegetated filter strips, and contour farming help to control erosion in cultivated areas. Crop rotation helps to control erosion, increases the content of organic matter, and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is suited to pasture and hay. Using this soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Wooded areas consist mainly of a mixture of hardwoods and pine trees, except where management practices have favored selected kinds of trees. The trees preferred for planting include sweetgum, loblolly pine, and Shumard oak. Plant competition is a severe limitation. If pine trees are planted, mechanical site preparation can help to control the competition from undesirable plants. Spraying an approved herbicide, cutting, and girdling help to eliminate weeds, hardwood sprouts, and unwanted trees. The hazard of erosion is moderate. Maintaining a good plant cover helps to control erosion. Also, restricting the use of equipment to drier seasons helps to control erosion.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

This soil is moderately suited as a site for residential and small commercial buildings. The seasonal wetness and the slope are moderate limitations on sites for residential buildings. The slope is a severe limitation on sites for small commercial buildings. The low strength is a severe limitation on sites for local roads. Special designs and proper construction help to overcome the limitations. Erosion is a hazard in areas that have been cleared for construction. However, constructing roads on the contour and designing dwellings that conform to the natural slope minimize the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The moderately slow permeability in the fragipan and the seasonal wetness are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed subsurface waste-water disposal system or an alternative

system helps to overcome the limitations.

This Providence soil is in capability subclass VIe and in woodland suitability group 8W.

QuA—Quitman fine sandy loam, 0 to 2 percent slopes. This somewhat poorly drained, nearly level soil formed in loamy deposits on terraces. Individual areas range from 5 to 50 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 7 inches, brown fine sandy loam

Subsoil:
- 7 to 15 inches, yellowish brown loam that has light brownish gray mottles
- 15 to 20 inches, yellowish brown loam that has strong brown and light brownish gray mottles
- 20 to 26 inches, mottled yellowish brown, light brownish gray, and strong brown loam
- 26 to 34 inches, grayish brown clay loam that has strong brown mottles
- 34 to 40 inches, light brownish gray clay loam that has dark brown and strong brown mottles
- 40 to 60 inches, grayish brown clay loam that has strong brown mottles

Included in mapping are small areas of Guyton, Myatt, and Savannah soils. The poorly drained Guyton and Myatt soils are in depressions and drainageways. The moderately well drained Savannah soils have a fragipan. They are in slightly higher, convex parts of the landscape. Also included are small areas of soils that are similar to the Quitman soil except that they have a higher content of silt in the solum and a few areas of soils that are extremely acid in the solum. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Quitman soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate in the surface layer and upper part of the subsoil, moderately slow in the lower part of the subsoil
Available water capacity: Moderate
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: Perched at a depth of 1.5 to 2.0 feet during wet seasons
Flooding: None
Root zone: Deep; somewhat restricted for plants that are not tolerant of wetness by a seasonal water table
Shrink-swell potential: Low
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content. It tends to crust and pack after hard rains.

Most of the acreage of this Quitman soil is used for row crops and pasture. A small acreage is used as woodland.

This soil is well suited to a variety of row crops, truck crops, and small grain that are tolerant of some wetness. The seasonal wetness is the main limitation affecting the production of crops. Excessive wetness during spring often delays planting, resulting in poor stands. Proper row arrangement and surface field ditches can remove excess surface water in low areas. Conservation tillage, cover crops, a crop rotation that includes grasses and legumes, and returning crop residue to the soil improve soil fertility and tilth and reduce crusting and packing.

This soil is well suited to pasture and hay crops that are tolerant of wetness. The excessive wetness is the major limitation for the production of forage. It can diminish the vigor of stands of pasture grasses during prolonged wet periods. Also, the production of forage decreases significantly during droughty periods in the summer. Restricted grazing when the soil is too wet minimizes compaction. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist mainly of hardwoods and an intermingling of pine trees, except where management practices have favored selected kinds of trees. The trees preferred for planting include loblolly pine and sweetgum. The seasonal wetness is a moderate limitation for the use of equipment. Using special equipment and logging during the drier periods help to overcome the problems caused by wetness, help to prevent the formation of ruts, and minimize soil compaction. If pine trees are planted, plant competition is a moderate limitation. If pine trees are planted, using mechanical site preparation, cutting bushes, and girdling trees help to control undesirable plants. Spraying with an approved herbicide helps to control the subsequent growth. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has poor potential as habitat for wetland wildlife.

The wetness is a moderate limitation on sites for residential and small commercial buildings. The low strength and wetness are moderate limitations on sites for local roads. Constructing on raised fill, using special designs and engineering techniques, and using proper

contruction practices can minimize the effects of these limitations. The moderately slow permeability and the seasonal high water table are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed and approved alternative system helps to overcome the limitations, or alternative sites can be used.

This Quitman soil is in capability subclass IIw and in woodland suitability group 10W.

Ro—Rosebloom silt loam, frequently flooded. This nearly level, poorly drained soil formed in silty alluvium on broad flats and in depressions and sloughs on flood plains. This soil is subject to flooding, generally from December through May in most years. However, flooding can occur at any time following heavy rains. It generally lasts for several days, but some low areas are inundated for much longer periods. Individual areas range from 5 to 20 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 9 inches, brown silt loam that has dark brown mottles

Subsoil:
- 9 to 32 inches, gray silt loam that has light yellowish brown and strong brown mottles
- 32 to 40 inches, light brownish gray silty clay loam that has light yellowish brown and strong brown mottles
- 40 to 50 inches, light brownish gray silty clay loam that has light yellowish brown and strong brown mottles

Underlying material:
- 50 to 60 inches, light gray silty clay loam that has light yellowish brown and strong brown mottles

Included in mapping are small areas of Arkabutla, Bibb, Chenneby, and Kinston soils. The somewhat poorly drained Arkabutla and Chenneby soils are generally in slightly higher and mildly convex positions on the landscape. Bibb and Kinston soils, which have a higher content of sand, are in landscape positions similar to those of the Rosebloom soil. Also included are small areas of soils that are in sloughs and drainageways and are ponded except during prolonged droughts; small areas of soils that have a large amount of sodium in the subsoil; areas of soils that are near overflow channels and have up to 20 inches of loamy and sandy overwash; and a few areas of soils that are only occasionally flooded. The included areas make up about 15 percent of the map unit.

Important properties of the Rosebloom soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At the surface or at a depth of 1.0 foot in late winter and early spring
Flooding: Brief to very long periods. Water ponds in lower areas following heavy rainfall, especially in late winter and early spring.
Root zone: Deep; somewhat restricted for plants that are not tolerant of wetness by the water table, which is at or near the surface from winter to the middle of spring
Shrink-swell potential: Low
Tilth: The soil dries slowly after heavy rains. The surface layer tends to crust and pack following hard rains.

Most of the acreage of this Rosebloom soil is used as woodland. Some areas that are less subject to flooding are used for pasture and hay. A small acreage is used for crops.

This soil is poorly suited to row crops, truck crops, and small grain because of wetness and frequent flooding. These limitations can be partially overcome by installing a specially planned drainage and levee system. Regulations that apply to drainage systems should be checked before initiating drainage work.

This soil is suited to pasture and hay crops that are tolerant of extended periods of wetness and of flooding. Drainage ditches help to remove surface water during the growing season, but plant stands can be damaged or destroyed by flooding early in the growing season. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Bottom-land hardwoods and some stands of swamp hardwoods in lower areas are the dominant trees. The trees preferred for planting include green ash, loblolly pine, eastern cottonwood, and sweetgum. Only those trees that can tolerate extended periods of seasonal wetness and flooding should be planted. The flooding and wetness are the main management concerns affecting forest management. They are severe limitations for the use of equipment, which is restricted to drier periods. If pine trees are planted, plant competition is a severe limitation. The seedling mortality rate is a moderate

limitation. Planting pine trees on bedded rows reduces the seedling mortality rate by lowering the effective depth of the high water table. Mechanical site preparation helps to control competition from undesirable plants. Applying an approved herbicide, cutting, and girdling help to eliminate weeds, hardwood sprouts, and unwanted trees and promote the growth of seedlings. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has fair potential as habitat for openland and woodland wildlife. It has good potential as habitat for wetland wildlife.

This soil is not suited as a site for residential or small commercial buildings or for septic tanks or subsurface waste-water disposal systems because of the wetness and frequent flooding. Flood-control measures generally are not practical because of the high cost. The low strength is also a severe limitation affecting local roads. Special designs and proper construction on raised fill help to overcome some of the limitations. Alternative sites can be selected for septic tanks and subsurface waste-water disposal systems.

This Rosebloom soil is in capability subclass Vw and in woodland suitability group 9W.

RuB2—Ruston fine sandy loam, 2 to 5 percent slopes, eroded. This well drained, gently sloping soil is on ridgetops on dissected uplands. It formed in loamy sediments. Individual areas range from long and narrow to broad and wide in shape. They range from 5 to 20 acres in size. Slopes generally are smooth and convex.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 6 inches, brown fine sandy loam that has a small amount of red sandy clay loam subsoil material

Subsoil:
- 6 to 34 inches, red sandy clay loam
- 34 to 46 inches, red loam that has pockets of light yellowish brown sandy loam
- 46 to 61 inches, red sandy clay loam that has light yellowish brown mottles
- 61 to 90 inches, red fine sandy loam

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. Some areas have a few rills and shallow gullies.

Included with this unit in mapping are small areas of Luverne, Okeelala, Savannah, and Smithdale soils. Luverne soils have a high content of clay in the solum. Luverne, Okeelala, and Smithdale soils are on shoulder slopes in landscape positions below the Ruston soil on ridgetops. The moderately well drained Savannah soils have a fragipan. They are in landscape positions similar to those of the Ruston soil. Also included are some areas of soils that are sandy loam in the lower part of the solum; areas of soils that have a clayey solum overlying a sandy substratum; some areas of soils that have thin horizontal layers of ironstone; areas of soils that have varying amounts of gravelly conglomerates, ironstone fragments, and quartzite and chert gravel; and areas of soils that have slopes of more than 5 percent. The included areas make up less than 25 percent of the map unit.

Important properties of the Ruston soil—

Soil reaction: Very strongly acid or strongly acid, except in the surface layer of areas that have been limed
Permeability: Moderate
Available water capacity: High
Surface runoff: Medium
Erosion hazard: Slight
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Effective root zone: 60 inches or more
Shrink-swell potential: Low
Tilth: Good; can be worked throughout a wide range in moisture content

Most of the acreage of this Ruston soil is used for pasture and row crops. A small acreage is used as woodland.

This soil is well suited to row crops, truck crops, and small grain. High yields can be obtained if proper management is applied and fertility is maintained. The hazard of erosion is the main limitation. Crop rotation, conservation tillage, grassed waterways, terracing, and contour farming help to control erosion on cultivated fields. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is well suited to pasture and hay. Using this soil for hay and pasture helps to control erosion. Controlling grazing when the soil is too wet reduces the surface compaction. Proper stocking rates, controlled grazing, and weed and bush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored a selected species. The soil is well suited to a variety of trees. The trees preferred for planting include

cherrybark oak, loblolly pine, and white oak. No significant limitations affect timber management. If pine trees are planted, site preparation helps to control undesirable plants. Cutting weeds and sprouts, girdling hardwoods, and applying an approved herbicide help to control undesirable plants and help pine seedlings to become established. Harvesting timber during drier periods helps to prevent the formation of ruts and minimizes soil compaction. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

This soil is well suited as a site for residential and small commercial buildings. Maintaining a vegetative cover helps to control erosion and reduces sedimentation in offsite locations. The low strength is a moderate limitation on sites for local roads. Special designs and proper construction help to overcome this limitation. Properly designed and installed septic tanks and subsurface waste-water disposal systems generally are satisfactory in areas of this soil.

This Ruston soil is in capability subclass IIe and in woodland suitability group 8A.

RuC3—Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded. This well drained, moderately sloping soil is on ridgetops and along side slopes in the uplands. It formed in loamy sediments. Individual areas are mainly long and narrow in shape. They range from 5 to 100 acres in size. Slopes generally are short and convex and are dissected by drainageways.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 3 inches, brown fine sandy loam that has a few pockets of yellowish red subsoil material

Subsoil:
- 3 to 11 inches, yellowish red clay loam
- 11 to 26 inches, red sandy clay loam that has yellowish brown mottles
- 26 to 44 inches, red fine sandy loam that has pockets of light yellowish brown loamy sand
- 44 to 54 inches, red sandy clay loam that has yellowish brown and pale brown mottles
- 54 to 60 inches, red fine sandy clay loam that has yellowish brown mottles

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of Luverne, Okeelala, Savannah, and Smithdale soils. Luverne soils, which have a high content of clay in the solum, are in landscape positions similar to those of the Ruston soil. Okeelala soils and Smithdale soils are on lower, steeper side slopes that border drainageways. The moderately well drained Savannah soils, which have a fragipan, are in landscape positions similar to those of the Ruston soil. Also included are some areas of soils that are sandy loam in the lower part of the solum; soils that have a clayey solum overlying a sandy substratum; some areas of soils that have layers of ironstone plates and iron-cemented chert gravel conglomerates and sandstone fragments; and small areas of soils that have slopes of less than 5 percent. The included areas make up about 15 percent of the map unit.

Important properties of the Ruston soil—

Soil reaction: Very strongly acid or strongly acid, except in the surface layer of areas that have been limed
Permeability: Moderate
Available water capacity: High
Surface runoff: Medium
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Effective root zone: 60 inches or more
Shrink-swell potential: Low
Tilth: Good; can be worked throughout a wide range in moisture content

Most of the acreage of this Ruston soil is used as pasture or woodland.

This severely eroded soil is suited to growing row crops, truck crops, and small grain. Erosion is a severe hazard (fig. 18). Conservation tillage, grassed waterways, contour stripcropping, terraces, and contour farming help to control erosion in cultivated areas. Crop rotation increases the content of organic matter and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting and packing after hard rains.

This soil is well suited to pasture and hay. Using this soil for hay and pasture also helps to control erosion. Controlling grazing when the soil is too wet helps to reduce surface compaction. Proper stocking rates, controlled grazing during wet periods, and weed and brush control help to keep the soil and pasture in good condition (fig. 19).

This soil is well suited to woodland. It has few

Figure 18.—An area of Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded. Proper management is required to protect the highly erosive topsoil.

limitations for woodland use and management. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored selected species. This soil is well suited to a variety of trees. The trees preferred for planting include white oak, cherrybark oak, and loblolly pine. If pine trees are planted, using mechanical site preparation helps to control undesirable plants. Cutting weeds and sprouts, girdling hardwoods, and applying an approved herbicide also help to control undesirable plants and help pine seedlings become established. Harvesting timber during drier periods helps to prevent the formation of ruts and minimizes soil compaction. Management practices that minimize the risk of erosion are desirable during timber harvest. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

This soil is well suited to residential development. The slope is a moderate limitation on sites for small commercial buildings. The low strength is a moderate limitation on sites for local roads. Special designs and proper construction help to overcome the limitations. Maintaining a vegetative cover helps to control erosion and reduces sedimentation in offsite locations. Properly designed and installed septic tanks and subsurface

Figure 19.—Cattle grazing in an area of Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded.

waste-water disposal systems generally are satisfactory in areas of this soil.

This Ruston soil is in capability subclass IVe and in woodland suitability group 8A.

SaA—Savannah fine sandy loam, 0 to 2 percent slopes. This moderately well drained, nearly level soil has a fragipan. It formed in loamy sediments in the uplands and on terraces. Individual areas range from long and narrow to broad and wide in shape. They range from 5 to 20 acres in size. Slopes generally are smooth to slightly convex.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 10 inches, brown fine sandy loam

Subsoil:

10 to 24 inches, yellowish brown loam

24 to 54 inches, a firm and brittle fragipan that is mottled yellowish brown, grayish brown, and gray loam

54 to 60 inches, a firm and brittle fragipan that is yellowish brown clay loam and has grayish brown mottles

Included in mapping are small areas of Myatt, Providence, and Quitman soils. The poorly drained Myatt soils are in depressions near the heads of drainageways and in drainage channels. Providence soils are in landscape positions similar to those of the Savannah soil. The somewhat poorly drained Quitman soils are in slightly lower, concave areas surrounding the heads of drainageways and in drainageways. Also

included are small areas of soils that have slopes of more than 2 percent. Small areas of soils in which the fragipan is underlain by a horizon that has a high content of clay are also included. These areas are on terraces above the flood plain along Twentymile Creek. The included soils make up about 15 percent of the map unit.

Important properties of the Savannah soil—

Soil reaction: Extremely acid to strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate in the surface layer and upper part of the subsoil, moderately slow in the fragipan
Available water capacity: Moderate
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet
Flooding: None
Root zone: Deep; somewhat restricted by a fragipan at depth of 1.5 to 3.0 feet
Shrink-swell potential: Low
Tilth: Good; can be worked throughout a wide range in moisture content

Most of the acreage of this Savannah soil is used for row crops or pasture. A small acreage is used as woodland.

This soil is well suited to a variety of row crops, truck crops, and small grain (fig. 20). The main limitations are seasonal wetness, the moderate depth of root zone, and the moderate available water capacity. Crop rotation increases the content of organic matter and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is well suited to pasture and hay. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored selected kinds of trees. The trees preferred for planting include sweetgum, loblolly pine, shortleaf pine, and southern red oak. The seasonal wetness is a moderate limitation for the use of equipment. Using special equipment and logging during the drier periods help to overcome the problems caused by wetness, help to prevent the formation of ruts, and minimize soil compaction. If pine trees are planted, plant competition is a moderate limitation. Using mechanical site preparation, cutting weeds and brush, and girdling hardwoods help to control undesirable plants. Spraying with an approved herbicide helps to control the subsequent growth. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

The wetness is a moderate limitation on sites for residential and small commercial buildings. It is caused by the water table, which is perched above the fragipan during wet seasons. The low strength and wetness are moderate limitations on sites for local roads. Special designs and proper engineering techniques help to overcome some of the limitations. The seasonal wetness and the moderately slow permeability in the fragipan are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed subsurface waste-water disposal system or an alternate system helps to overcome the limitations.

This Savannah soil is in capability subclass IIw and in woodland suitability group 8W.

SaB2—Savannah fine sandy loam, 2 to 5 percent slopes, eroded. This moderately well drained soil has a fragipan. It is gently sloping and is on uplands and terraces. It formed in loamy sediments. Individual areas are 5 to 30 acres in size. Slopes generally are convex.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 6 inches, dark yellowish brown fine sandy loam that has a small amount of dark yellowish brown subsoil material
Subsoil:
6 to 14 inches, dark yellowish brown loam
14 to 22 inches, yellowish brown sandy clay loam that has yellowish brown and pale brown mottles
22 to 54 inches, a compact and brittle fragipan that is yellowish brown sandy loam and has light brownish gray and dark yellowish brown mottles
54 to 60 inches, a compact and brittle fragipan that is yellowish brown sandy loam and has light brownish gray and brown mottles

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. Some areas have a few rills and shallow gullies.

Included in mapping are small areas of Providence

Figure 20.—A good stand of grain sorghum, which is ready to be harvested, in an area of Savannah fine sandy loam, 0 to 2 percent slopes.

soils, the somewhat poorly drained Quitman soils, and the well drained Ruston and Smithdale soils. Providence soils are in landscape positions similar to those of the Savannah soil. Quitman soils are in depressions at the head of drainageways and in drainageways. Ruston soils are on slightly convex areas on the crests of ridges. Smithdale soils are on lower side slopes along incised drainageways. Also included are small areas of soils in which the fragipan overlies a clayey substratum. These areas are on terraces above the flood plain along Twentymile Creek. The included soils make up about 15 percent of the map unit.

Important properties of the Savannah soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed

Permeability: Moderate in the upper part of the subsoil, moderately slow through the fragipan
Available water capacity: Moderate
Surface runoff: Slow to medium
Erosion hazard: Moderate
Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet during wet seasons. The fragipan restricts the rooting depth and limits the amount of water available to plants.
Flooding: None
Root zone: Deep; somewhat restricted by a compact, brittle fragipan at a depth of about 2.0 feet
Shrink-swell potential: Low
Tilth: Good. The soil can be worked throughout a wide range of moisture conditions. The surface layer tends to crust and pack after hard rains. A plow pan forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the plow pan.

Most areas of this Savannah soil are used as pasture or cropland. A small acreage is used as woodland.

This soil is well suited to a variety of row crops, truck crops, and small grain. The hazard of erosion is a major management concern. The seasonal wetness, the moderate depth of root zone, and the moderate available water capacity are also management concerns. Conservation tillage, terraces, grassed waterways, and contour farming help to control erosion in cultivated areas. Crop rotation increases the content of organic matter and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for hay and pasture (fig. 21). Using this soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored selected kinds of trees. The trees preferred for planting include sweetgum, loblolly pine, shortleaf pine, and southern red oak. The seasonal wetness is a moderate limitation for the use of equipment. Using special equipment and logging during the drier periods help to overcome the problems caused by wetness, help to prevent the formation of ruts, and minimize soil compaction. If pine trees are planted, plant competition is a moderate limitation. Using mechanical site preparation, cutting weeds and bushes, and girdling hardwoods help to control undesirable plants. Spraying with an approved herbicide helps to control the subsequent growth. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

The wetness is a moderate limitation on sites for residential and small commercial buildings. It is caused by the water table, which is perched above the fragipan during wet seasons. The low strength and wetness are moderate limitations on sites for local roads. Special designs and proper engineering techniques help to overcome some of the limitations. The seasonal wetness and the moderately slow permeability in the fragipan are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed subsurface waste-water disposal system or an alternative system helps to overcome the limitations.

This Savannah soil is in capability subclass IIe and in woodland suitability group 8W.

SaC3—Savannah fine sandy loam, 5 to 8 percent slopes, severely eroded. This moderately well drained soil has a fragipan. It is sloping and is on uplands and terraces. It formed in loamy sediments. Individual areas are 5 to about 20 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 3 inches, yellowish brown fine sandy loam mixed with common pockets of yellowish brown subsoil material
Subsoil:
3 to 16 inches, yellowish brown loam
16 to 34 inches, a firm and brittle fragipan that is yellowish brown loam and has light brownish gray and strong brown mottles
34 to 60 inches, a firm and brittle fragipan that is brownish yellow clay loam and has light brownish gray and reddish yellow mottles

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of Providence soils and the well drained Ruston and Smithdale soils. Providence soils have a higher content of silt in the solum than the Savannah soil. Ruston soils do not have a fragipan. Providence and Ruston soils are in landscape positions similar to those of the Savannah

Figure 21.—High-quality round bales of hay, produced in an area of Savannah fine sandy loam, 2 to 5 percent slopes, eroded.

soil. Smithdale soils are in lower positions on steeper side slopes along drainageways. Also included are small areas of soils in which the fragipan overlies a clayey substratum. These areas are on stream terraces above the flood plain along Twentymile Creek. The included soils make up about 15 percent of the map unit.

Important properties of the Savannah soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate in the surface layer and upper part of the subsoil, moderately slow through the fragipan
Available water capacity: Moderate
Surface runoff: Medium
Erosion hazard: Severe
Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet during wet seasons
Flooding: None
Root zone: Deep; somewhat restricted by a compact, brittle fragipan in the lower part of the subsoil
Shrink-swell potential: Low
Tilth: Good. It can be worked throughout a wide range of moisture conditions. The surface layer tends to crust and pack after hard rains.

Most areas of this Savannah soil are used as pasture or cropland. A small acreage is used as woodland.

This soil is poorly suited to row crops, truck crops, and small grain. The hazard of erosion is the major management concern. The shallow rooting depth over the fragipan, the moderate available water capacity, and the seasonal wetness are also management concerns. Conservation tillage, cover crops, grassed waterways,

terraces, contour stripcropping, vegetated filter strips, and contour farming help to control erosion in cultivated areas. Crop rotation helps to erosion, increases the content of organic matter, and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is well suited to pasture and hay. Using this soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except in areas where management practices have favored selected species. The trees preferred for planting include sweetgum, loblolly pine, shortleaf pine, and southern red oak. The seasonal wetness is a moderate limitation for the use of equipment. If pine trees are planted, plant competition is a moderate limitation. Restricting the use of equipment to the drier periods reduces the hazard of erosion, helps to prevent the formation of ruts, and minimizes soil compaction. If pine trees are planted, using mechanical site preparation, cutting weeds and bushes, and girdling hardwoods helps to control competition from undesirable plants. Spraying with an approved herbicide helps to control the subsequent growth. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

This soil is moderately suited to residential and small commercial building sites. The seasonal wetness is a moderate limitation on sites for residential buildings. The wetness and the slope are moderate limitations on sites for small commercial buildings. The low strength and wetness are moderate limitations on sites for local roads. Special designs and proper construction help to overcome the limitations. The moderately slow permeability in the fragipan and the seasonal wetness are severe limitations for septic tanks and subsurface waste-water disposal fields. A specially designed subsurface waste-water disposal system or an alternative system helps to overcome the limitations.

This Savannah soil is in capability subclass IVe and in woodland suitability group 8W.

SaD3—Savannah fine sandy loam, 8 to 12 percent slopes, severely eroded. This moderately well drained soil has a fragipan. It is strongly sloping and is on uplands and terraces. It formed in loamy sediments. Individual areas are 5 to about 25 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 3 inches, yellowish brown fine sandy loam mixed with common pockets of yellowish brown subsoil material

Subsoil:
- 3 to 16 inches, yellowish brown loam
- 16 to 34 inches, a firm and brittle fragipan that is yellowish brown loam and has light brownish gray and strong brown mottles
- 34 to 60 inches, a firm and brittle fragipan that is brownish yellow clay loam and has light brownish gray and reddish yellow mottles

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of Providence and the well drained Smithdale soils. Providence soils have a higher content of silt in the solum than the Savannah soil. They are in landscape positions similar to those of the Savannah soil. Smithdale soils are on the lower side slopes along drainageways. Also included are small areas of soils in which the fragipan overlies a clayey substratum. These areas are on terraces above the flood plain along Twentymile Creek. These soils make up about 15 percent of the map unit.

Important properties of the Savannah soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate in the surface layer and upper part of the subsoil, moderately slow through the fragipan
Available water capacity: Moderate
Surface runoff: Medium
Erosion hazard: Severe
Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet during wet seasons
Flooding: None
Root zone: Deep; somewhat restricted by a compact, brittle fragipan in the lower part of the subsoil
Shrink-swell potential: Low
Tilth: Good. The soil can be worked throughout a wide range of moisture conditions. The surface layer tends to crust and pack after hard rains.

Most areas of this Savannah soil are used as pasture or cropland. A small acreage is used as woodland.

This soil is poorly suited to row crops, truck crops, and small grain. The hazard of erosion and the runoff rate are the major management concerns. The shallow rooting depth over the fragipan, the moderate available water capacity, and the seasonal wetness are also management concerns. Conservation tillage, cover crops, grassed waterways, terraces, contour stripcropping, vegetated filter strips, and contour farming help to control erosion in cultivated areas. Crop rotation helps to control erosion, increases the content of organic matter, and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is suited to grasses and legumes for hay and pasture. Using this soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except in areas where management practices have favored selected kinds of trees. The trees preferred for planting include sweetgum, loblolly pine, shortleaf pine, and southern red oak. The seasonal wetness, which restricts the use of equipment, is a moderate limitation. Plant competition is a moderate limitation. Restricting the use of equipment to the drier periods reduces the hazard of erosion, helps to prevent the formation of ruts, and minimizes soil compaction. If pine trees are planted, using mechanical site preparation, cutting weeds and bushes, and girdling hardwoods help to control competition from undesirable plants. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

This soil is moderately suited to residential uses because of the wetness and the slope. The slope is a severe limitation on sites for small commercial buildings. The low strength, the slope, and wetness are moderate limitations on sites for local roads. Special designs and proper construction help to overcome the limitations. Erosion is a hazard in areas that have been cleared for construction. However, designing dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The moderately slow permeability in the fragipan and the seasonal wetness are severe limitations for septic tanks and subsurface waste-water disposal fields. A specially designed subsurface waste-water disposal system or an alternative system helps to overcome the limitations.

This Savannah soil is in capability subclass VIe and in woodland suitability group 8W.

SmD3—Smithdale fine sandy loam, 8 to 12 percent slopes, severely eroded. This well drained, strongly sloping soil formed in loamy sediments on hillslopes in the uplands. Individual areas are large and irregular in shape. They range from 5 to 50 acres in size. Slopes generally are long and are dissected by well defined drainageways.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 2 inches, brown fine sandy loam mixed with common pockets of yellowish red subsoil material

Subsoil:
- 2 to 14 inches, yellowish red clay loam
- 14 to 22 inches, yellowish red sandy clay loam
- 22 to 46 inches, yellowish red loam
- 46 to 60 inches, red sandy loam that has light brown mottles

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included with this unit in mapping are small areas of Luverne, Okeelala, and Ruston soils. Luverne soils have a higher content of clay in the solum than the Smithdale soil. Luverne and Okeelala soils are in landscape positions similar to those of the Smithdale soil. Ruston soils are in higher parts of the terrain on the ridgetops. Also included are soils that have discontinuous, irregularly bedded ironstone plates and iron-cemented chert pebble conglomerates and small areas of Smithdale soils that have slopes of more than 12 percent. The included areas make up about 10 to 15 percent of the map unit.

Important properties of the Smithdale soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate in the upper part of the subsoil, moderately rapid in the lower part
Available water capacity: Moderate
Surface runoff: Medium to rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet

Figure 22.—Young loblolly pines grow well in an area of Smithdale fine sandy loam, 8 to 12 percent slopes, severely eroded.

Flooding: None
Effective root zone: 60 inches or more
Shrink-swell potential: Low

Most of the acreage of this Smithdale soil is used for pasture or woodland.

This soil is poorly suited to row crops, truck crops, and small grain because of the slope and the severe hazard of erosion. Conservation tillage, grassed waterways, crop rotation, and contour farming help to control erosion in cultivated areas.

This soil is suited to grasses and legumes for hay and pasture. The slope, the severe hazard of erosion, and the moderate available water capacity are the main limitations for growing grasses and legumes. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland (fig. 22). Most wooded areas consist of a mixture of hardwoods and

pine trees, except where management practices have favored selected kinds of trees. The soil has few limitations for forest management. The trees preferred for planting include loblolly pine, cherrybark oak, sweetgum, and southern red oak. If pine trees are planted, mechanical site preparation helps to control competition from unwanted plants. Cutting weeds and hardwood sprouts, girdling undesirable trees, and applying an approved herbicide help to control undesirable plants while the pine seedlings become established.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

The slope is a moderate limitation on sites for residential buildings and for local roads. It is a severe limitation on sites for small commercial buildings. Special designs and proper engineering techniques help to overcome the limitation. Erosion is a hazard in areas that have been cleared for construction. However, designing dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The slope is a moderate limitation for septic tanks and subsurface waste-water disposal systems. It can be minimized by installing field lines on the contour.

This Smithdale soil is in capability subclass VIe and in woodland suitability group 8A.

SNR—Smithdale, Luverne, and Ruston fine sandy loams, 2 to 45 percent slopes. This map unit consists of well drained, gently sloping to steep soils. The Smithdale and Ruston soils formed in loamy sediments, and the Luverne soil formed in clayey sediments. The soils of this map unit are in rugged, hilly uplands that are dissected by a highly developed dendritic drainage system. The Ruston soil is on narrow ridgetops. It has slopes of 2 to 8 percent. The Smithdale and Luverne soils are mainly on steeper hillslopes above the incised drainageways. They are also on some narrow, winding ridgetops.

Because the present and predicted major land use is woodland, these soils were mapped together. Delineations have variable amounts of each component; some areas contain all three soils, others contain two, and some areas contain only one of the soils. The Smithdale soil makes up about 45 percent of the map unit, the Luverne soil makes up about 20 percent, the Ruston soil makes up about 15 percent, and included soils make up about 20 percent. Onsite investigation is required to identify the location of each component. Individual areas, which are dominantly wooded, range from 50 to 1,000 acres in size. The Smithdale soil is mainly on slopes that range from 12 to 45 percent, the Luverne soil is mainly on slopes that range from 2 to 45 percent, and the Ruston soil is mainly on slopes that range from 2 to 8 percent.

The typical sequence, depth, and composition of the layers of the Smithdale soil are as follows—

Surface layer:
- 0 to 3 inches, brown fine sandy loam

Subsoil:
- 3 to 14 inches, yellowish brown sandy loam
- 14 to 36 inches, yellowish red sandy clay loam
- 36 to 60 inches, yellowish red sandy loam that has brownish yellow mottles
- 60 to 65 inches, yellowish red sandy loam that has yellowish brown mottles

The typical sequence, depth, and composition of the layers of the Luverne soil are as follows—

Surface layer:
- 0 to 4 inches, dark grayish brown fine sandy loam

Subsurface layer:
- 4 to 12 inches, yellowish brown fine sandy loam

Subsoil:
- 12 to 35 inches, yellowish red sandy clay that has red and light olive brown mottles
- 35 to 46 inches, red sandy clay loam

Underlying material:
- 46 to 59 inches, red sandy clay loam that has grayish brown and brown mottles
- 59 to 70 inches, yellowish red sandy clay loam
- 70 to 76 inches, yellowish red sandy clay loam that has lamellae of clay, very fine sandy loam, and silt loam

The typical sequence, depth, and composition of the layers of the Ruston soil are as follows—

Surface layer:
- 0 to 3 inches, dark brown fine sandy loam

Subsurface layer:
- 3 to 12 inches, light yellowish brown fine sandy loam

Subsoil:
- 12 to 22 inches, yellowish red sandy clay loam
- 22 to 36 inches, yellowish red fine sandy loam
- 36 to 41 inches, mottled red and light yellowish brown sandy loam that has pockets of loamy sand
- 41 to 72 inches, red sandy clay loam that has light yellowish brown mottles

Included in mapping are small areas of Okeelala soils on hillsides and the moderately well drained Providence, Savannah, and Tippah soils on ridgetops.

Providence and Savannah soils have a fragipan. Providence and Tippah soils have a higher content of silt in the solum than the major soils. Also included are small areas that have a network of v-shaped gullies. Also included are small areas of soils that have a clayey solum overlying a sandy substratum. These areas are mainly on ridgetops. Also included are areas of Smithdale soils that have irregularly bedded ironstone plates, iron-cemented chert gravel conglomerates, and ironstone fragments. The included areas make up about 20 percent of the map unit.

Important properties of Smithdale, Luverne, and Ruston soils—

Soil reaction: Very strongly acid or strongly acid, except in the surface layer of areas that have been limed
Permeability: Moderate to moderately slow
Available water capacity: High
Surface runoff: Medium to rapid
Erosion hazard: Moderate or severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: Smithdale and Ruston—more than 60 inches; Luverne—somewhat restricted by the plastic, clayey subsoil
Shrink-swell potential: Luverne—moderate; Smithdale and Ruston—low
Tilth: Fair to good, although these soils should not be cultivated because of the severe hazard of erosion

Most of the acreage of this map unit is used as woodland.

Most areas of this map unit are not suited to truck crops, small grain, or row crops because of the slope, the rapid runoff rate, and the severe hazard of erosion. Some gently and moderately sloping areas on ridgetops are suitable for cultivation if erosion-control measures are applied. Maintaining a permanent vegetative cover of grasses or trees on the steeper hillsides helps to control erosion and prevent further soil losses to erosion (fig. 23).

Most areas of this map unit are poorly suited to pasture and hay. Some areas on the broader ridgetops, which are sloping and strongly sloping, are moderately suited to pasture and hay. The plants selected should not require frequent renovation and should provide adequate ground cover. If this map unit is used for pasture, proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition. In most areas, the use of equipment is difficult because of the steep slope. The production of forage during the middle of summer is low, and stocking rates should be lowered to prevent overgrazing.

This map unit is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except areas where management practices have favored selected kinds of trees. The trees preferred for planting include loblolly pine, sweetgum, southern red oak, and cherrybark oak. The soils are well adapted to growing loblolly pine. The main management concerns are the slope, which restricts the use of equipment, and the severe hazard of erosion. Rills and gullies can rapidly develop from timber harvest operations unless adequate water bars, plant cover, or both are provided. The hazard of erosion and the use of equipment are moderate to severe limitations in areas that have slopes of more than 15 percent. The use of equipment is moderately limited in areas that have slopes of 15 to 35 percent and is severely limited in areas that have slopes of more than 35 percent. The hazard of erosion can be reduced by taking care to not to cut ruts in the ground on steep slopes. Avoiding the use of steep slopes for logging roads and skid trails helps to control erosion and minimizes the formation of gullies. When wet, the Luverne soil has poor trafficability because it has a sticky and plastic, clayey texture. The equipment limitation can be partially overcome by logging during drier periods. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

The Luverne and Smithdale soils have fair potential as habitat for openland wildlife, good potential as habitat for woodland wildlife, and very poor potential as habitat for wetland wildlife. The Ruston soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

In most areas of this map unit, the slope is the main hazard for residential and small commercial buildings and for local roads. The low strength is also a severe limitation for local roads in areas of the Luverne soil. Although the limitations are difficult and expensive to overcome, they can be partially overcome by using special designs and engineering techniques and proper construction practices. Some areas, especially areas of the Ruston soil, are on the gentler slopes of ridgetops and have fewer limitations than those soils on steep slopes. Areas of the Ruston soil that have slopes of less than 5 percent have few limitations. Erosion is a hazard in areas that have been cleared for construction. However, designing dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The slope and the moderately slow

Figure 23.—A pasture in an area of Smithdale, Luverne, and Ruston fine sandy loams, 2 to 45 percent slopes. The permanent vegetative cover must be carefully managed to provide protection against erosion.

permeability in the clayey subsoil of the Luverne soil are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed and approved alternative system helps to overcome the limitations, or alternative sites can be used. The slope is a major management concern for septic tanks and subsurface waste-water disposal systems in most areas of the Smithdale soil. A few areas, mainly on shoulder slopes, have slopes that are not as steep and gradients that are less than 15 percent. These areas only have a moderate limitation because of the slope. In areas that have slopes of 15 to 30 percent, the slope can be minimized by installing field lines on the contour. In areas that have steep slopes of more than 30 percent, the limitation is severe. An alternative subsurface waste-water disposal system should be designed to prevent effluent from surfacing in downslope areas and causing a pollution hazard.

The Smithdale soil is in capability subclass VIIe and in woodland suitability group 8R. The Luverne soil is in capability subclass VIIe and in woodland suitability group 8R. The Ruston soil is in capability subclass IVe and in woodland suitability group 8A.

SuD3—Sumter silty clay, 8 to 12 percent slopes, severely eroded. This strongly sloping, well drained soil formed in marly clay and the underlying weathered chalk on hillsides and narrow ridges in the uplands. Individual areas range from 5 to 50 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 2 inches, grayish brown silty clay mixed with many pockets of light brownish gray, mottled subsoil material

Subsoil:
2 to 22 inches, yellowish brown clay
22 to 37 inches, light olive brown clay that has many calcium carbonate nodules

Underlying material:
37 to 48 inches, light brownish gray chalk

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of the somewhat poorly drained Kipling soils on hillsides. Kipling soils have acid reaction in the solum and are deep over marly clay or chalk. Also included are areas of soils that are so eroded that the underlying chalk is within a few inches of the surface and some areas of chalk outcrops. The included areas make up about 15 percent of the map unit.

Important properties of the Sumter soil—

Soil reaction: Slightly alkaline or moderately alkaline throughout the profile
Permeability: Slow
Available water capacity: Moderate
Surface runoff: Rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: Somewhat restricted by the alkaline subsoil, which is firm, sticky, and plastic
Shrink-swell potential: High
Tilth: Poor. The silty clay surface layer is sticky and plastic when wet and is hard when dry.

Most of the acreage of this Sumter soil is used for pasture or hay. Some areas were abandoned and reverted to woodland dominated by eastern redcedar, honeylocust, wild plum, and Osage-orange trees.

This soil is poorly suited to cultivated crops because of the low production potential, the slope, the rapid runoff rate, and the severe hazard of erosion. Because of the slope and the severe hazard of erosion, a permanent vegetation of grasses and trees should be maintained on the soil to prevent further soil losses from erosion.

This soil is poorly suited to pasture and hay because of the low productivity. If this soil is used for pasture, proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is suited to woodland. Eastern redcedar, redbud, honeylocust, chinkapin oak, and Osage-orange are the dominant trees in wooded areas. The trees that are not tolerant of alkaline soil conditions have a low rate of survival (fig. 24). This limits the selection of trees suitable for planting. The equipment limitation, the hazard of erosion, and plant competition are moderate management concerns. The seedling mortality rate is a severe management concern. Eastern redcedar is a preferred tree for planting. Mechanical site preparation practices help to establish seedlings and increase early growth rates. When wet, this clayey soil is very sticky and plastic and has poor trafficability. Using equipment when the soil is dry minimizes soil compaction and helps to prevent the formation of ruts.

This soil has severe limitations as a site for residential and small commercial buildings. The high shrink-swell potential is the main limitation on sites for residential and small commercial buildings. The slope is also a severe limitation on sites for small commercial buildings. The high shrink-swell potential and the low strength are severe limitations on sites for local roads. Special designs and careful installation procedures help to overcome the limitations. The slow permeability in the clayey subsoil and the depth to marly clay or chalk are severe limitations for septic tank and subsurface waste-water disposal systems. A specially designed and approved alternative system helps to overcome the limitations, or alternative sites can be used.

The Sumter soil is in capability subclass VIIe and in woodland suitability group 3C.

SuF3—Sumter silty clay, 12 to 40 percent slopes, severely eroded. This moderately steep and steep, well drained soil formed in marly clays and the underlying chalk on hillsides in dissected uplands. Individual areas range from 5 to 100 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 2 inches, grayish brown silty clay mixed with many pockets of light brownish gray, mottled subsoil material

Subsoil:
2 to 22 inches, yellowish brown clay
22 to 37 inches, light olive brown clay that has many calcium carbonate nodules

Underlying material:
37 to 48 inches, light brownish gray chalk

Figure 24.—An area of Sumter silty clay, 8 to 12 percent slopes, severely eroded. The chalk bedrock in the subsoil limits the rooting depth and limits the selection of trees suitable for planting.

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of the somewhat poorly drained Kipling soils on hillsides. Kipling soils have acid reaction in the solum and are deep over marly clay or chalk. Also included are areas of soils that are so eroded that the underlying chalk is within a few inches of the surface and areas of chalk outcrops. The included areas make up about 15 percent of the map unit.

Important properties of the Sumter soil—

Soil reaction: Slightly alkaline or moderately alkaline throughout the profile
Permeability: Slow
Available water capacity: Moderate
Surface runoff: Rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: Somewhat restricted by the alkaline, clayey subsoil, which is firm, sticky, and plastic
Shrink-swell potential: High

Most of the acreage of this Sumter soil is used for pasture. Many areas were abandoned and reverted to woodland dominated by eastern redcedar and Osage-orange trees.

This soil is unsuited to cultivated crops because of the low production potential, the slope, the rapid runoff rate, and the severe hazard of erosion. Because of the slope and the severe hazard of erosion, a permanent vegetation of grasses and trees should be maintained on this soil to prevent further soil losses from erosion.

This soil is poorly suited to pasture and hay because of the low productivity and the slope, which severely hinders the use of farm machinery. If this soil is used for pasture, proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is suited to woodland. Eastern redcedar, redbud, honeylocust, chinkapin oak, and Osage-orange are the dominant trees in wooded areas. The trees that are not tolerant of alkaline soil conditions have a low rate of survival. The chalk bedrock in the subsoil restricts the growth of roots and limits the selection of trees suitable for planting. The slope limits the use of equipment. The seedling mortality rate is a severe limitation, and plant competition is a moderate limitation. Eastern redcedar is a preferred tree for planting. Mechanical site preparation practices help to establish seedlings and increase early growth rates. When wet, this clayey soil is very plastic and sticky and has poor trafficability. Limiting the use of equipment to drier periods in summer and fall helps to prevent the formation of ruts and minimizes soil compaction.

The slope and the high shrink-swell potential are the main limitations on sites for residential and small commercial buildings. The high shrink-swell potential, the slope, and the low strength are severe limitations on sites for local roads. Special designs and careful installation procedures help to overcome the limitations. The slow permeability in the clayey subsoil, the slope, and the depth to marly clay or chalk are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed and approved alternative system helps to overcome the limitations, or alternative sites can be used.

The Sumter soil is in capability subclass VIIe and in woodland suitability group 3R.

TpC2—Tippah silt loam, 5 to 8 percent slopes, eroded. This moderately sloping, moderately well drained soil formed in a thin mantle of loess and the underlying acid clay. It is on slopes above drainageways and on ridgetops in undulating to rolling areas in the uplands. Individual areas range from 5 to more than 20 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
- 0 to 6 inches, dark brown silt loam that has a few pockets of strong brown subsoil material

Subsoil:
- 6 to 15 inches, strong brown silty clay loam that has pale brown mottles
- 15 to 26 inches, strong brown silty clay loam that has common medium distinct pinkish gray mottles
- 26 to 36 inches, strong brown silty clay loam that has pinkish gray mottles
- 36 to 60 inches, strong brown clay that has light brownish gray and yellowish brown mottles

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. Some areas have a few rills and shallow gullies.

Included in mapping are small areas of Luverne and Providence soils. The well drained Luverne soils have a higher content of clay in the upper part of the subsoil than the Tippah soil. They are mainly on adjacent side slopes below the Tippah soil. Providence soils have a fragipan. They are in landscape positions similar to those of the Tippah soil. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Tippah soil—

Soil reaction: Very strongly acid or moderately acid throughout the profile, except in the surface layer of areas that have been limed
Permeability: Moderate in the surface layer and upper part of the subsoil, slow in the lower part of the subsoil
Available water capacity: High
Surface runoff: Medium
Erosion hazard: Moderate
Seasonal high water table: Perched at a depth of 2.0 to 2.5 feet above the clayey lower part of the subsoil during wet seasons in winter and early spring
Flooding: None
Root zone: Deep; somewhat restricted by a tight, clayey texture in the lower part of the subsoil
Shrink-swell potential: Moderate in the upper part of the subsoil, high in the lower part
Tilth: Good. This soil can be worked throughout a wide range of moisture conditions, but the surface layer tends to crust and pack after hard rains. A plow pan

forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the plow pan.

Most of the acreage of this Tippah soil is used for pasture or row crops. A small acreage is used as woodland.

This soil is suited to a variety of row crops, truck crops, and small grain. The hazard of erosion is the major management concern. Other limitations include the moderate depth of the root zone and the moderate available water capacity. The seasonal wetness can delay tillage operations in the spring. Conservation tillage, cover crops, grassed waterways, terraces, contour stripcropping, vegetated filter strips, and contour farming help to control erosion in cultivated areas. Crop rotation helps to control erosion, increases the content of organic matter, and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for hay and pasture. Using this soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except in areas where management practices have favored selected kinds of trees. The trees preferred for planting include sweetgum, loblolly pine, and cherrybark oak. Plant competition is a moderate limitation. If pine trees are planted, mechanical site preparation helps to control competition from undesirable plants. Cutting and girdling eliminate unwanted weeds, brush, and trees. Spraying with an approved herbicide controls the competing vegetation and helps seedlings become established. Logging during the drier periods minimizes soil compaction and helps to prevent the formation of ruts that accelerate the rate of erosion. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

This soil is moderately suited as a site for residential and small commercial buildings. The seasonal wetness and the high shrink-swell potential are moderate limitations on sites for residential buildings. The slope is also a moderate limitation on sites for small commercial buildings. The low strength is a severe limitation on sites for local roads. Special designs and proper construction help to overcome the limitations. Erosion is a hazard in areas that have been cleared for construction. However, designing dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The slow permeability in the clayey layers of the lower part of the subsoil and the seasonal wetness are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed subsurface waste-water disposal system or an alternative system helps to overcome the limitations.

This Tippah soil is in capability subclass IIIe and in woodland suitability group 8A.

TpC3—Tippah silt loam, 5 to 8 percent slopes, severely eroded. This moderately sloping, moderately well drained soil formed in a thin mantle of loess and the underlying acid clay. It is are mainly on slopes above drainageways in undulating to rolling areas on uplands. Individual areas range from 5 to 20 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 3 inches, dark brown silt loam mixed with many pockets of strong brown silty clay loam subsoil material

Subsoil:

3 to 10 inches, strong brown silty clay loam

10 to 20 inches, strong brown silty clay loam

20 to 30 inches, strong brown silty clay loam that has yellowish red and light brownish gray mottles

30 to 60 inches, brownish yellow clay that has red and gray mottles

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of Luverne and Providence soils. The well drained Luverne soils have a lower content of silt in the upper part of the solum than the Tippah soil. They are in similar landscape positions above drainageways. Providence soils have a fragipan. They are mainly on the shoulder slopes in slightly higher positions than the Tippah soil and are near the heads of drainageways. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Tippah soil—

Soil reaction: Very strongly acid or moderately acid throughout the profile, except in the surface

layer of areas that have been limed

Permeability: Moderate in the surface layer and upper part of the subsoil, slow in the lower part of the subsoil

Available water capacity: High

Surface runoff: Medium

Erosion hazard: Severe

Seasonal high water table: Perched at a depth of 2.0 to 2.5 feet above the clayey lower part of the subsoil during wet seasons in winter and early spring

Flooding: None

Root zone: Deep; somewhat restricted by a tight, clayey texture in the lower part of the subsoil

Shrink-swell potential: Moderate in the upper part of the subsoil, high in the lower part

Tilth: Good. This soil can be worked throughout a wide range of moisture conditions, but the surface layer tends to crust and pack after hard rains. A plow pan forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the plow pan.

Most areas of this Tippah soil are used as pasture and cropland. A small acreage is used as woodland.

This severely eroded soil is poorly suited to row crops, truck crops, and small grain. The severe hazard of erosion is the major management concern. The productivity has been greatly reduced as the result of severe past erosion. The seasonal wetness can delay tillage operations in spring. Conservation tillage, cover crops, grassed waterways, terraces, contour stripcropping, vegetated filter strips, and contour farming help to control erosion in cultivated areas. Crop rotation helps to control erosion, increases the content of organic matter, and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is suited to grasses and legumes for hay and pasture. Using this soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored selected kinds of trees. The trees preferred for planting include sweetgum, loblolly pine, and cherrybark oak. Plant competition is the major management concern. If pine trees are planted, mechanical site preparation helps to control competition from undesirable plants. Cutting weeds and sprouts and girdling trees control the competing vegetation. Spraying with an approved herbicide controls the competing vegetation while the seedlings become established. Logging during the drier periods minimizes soil compaction and helps to prevent the formation of ruts that accelerate the rate of erosion. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

This soil is moderately suited as a site for residential and small commercial buildings. The seasonal wetness and the high shrink-swell potential are moderate limitations on sites for residential buildings. The slope is also a moderate limitation on sites for small commercial buildings. The low strength is a severe limitation on sites for local roads. Special designs and proper construction help to overcome the limitations. Erosion is a hazard in areas that have been cleared for construction. However, designing dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The slow permeability in the clayey layers of the lower part of the subsoil and the seasonal wetness are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed subsurface waste-water disposal system or an alternate system helps to overcome the limitations.

This Tippah soil is in capability subclass IVe and in woodland suitability group 8A.

TpD3—Tippah silt loam, 8 to 12 percent slopes, severely eroded. This strongly sloping, moderately well drained soil formed in a thin mantle of loess and the underlying acid clay. It is on hillslopes above drainageways in the uplands. Individual areas range from 5 to 30 acres in size.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 3 inches, dark brown silt loam mixed with many pockets of strong brown subsoil material

Subsoil:

3 to 20 inches, strong brown silty clay loam

20 to 30 inches, strong brown silty clay loam that has yellowish red and light brownish gray mottles

30 to 60 inches, brownish yellow clay that has red and gray mottles

In most areas, most of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas the plow layer is the original topsoil, but in most areas

the plow layer is essentially in the subsoil. Most areas have rills and shallow gullies.

Included in mapping are small areas of Luverne and Providence soils. The well drained Luverne soils have a lower content of silt in the upper part of the solum than the Tippah soil. They are mainly along the more sloping areas above drainageways. Providence soils have a fragipan. They are in sloping parts of the landscape that are similar to those of the Tippah soil. The included soils make up about 10 to 15 percent of the map unit.

Important properties of the Tippah soil—

Soil reaction: Very strongly acid or moderately acid in the surface layer, very strongly acid in the subsoil
Permeability: Moderate in the surface layer and upper part of the subsoil, slow in the lower part of the subsoil
Available water capacity: High
Surface runoff: Medium to rapid
Erosion hazard: Severe
Seasonal high water table: Perched at a depth of 2.0 to 2.5 feet above the clayey lower part of the subsoil during wet seasons in winter and early spring
Flooding: None
Root zone: Deep, somewhat restricted by the firm part of the subsoil that perches water at a depth of 2.0 to 2.5 feet during winter and early spring
Shrink-swell potential: Moderate in the upper part of the subsoil, high in the lower part
Tilth: Good. This soil can be worked throughout a wide range of moisture conditions, but the surface layer tends to crust and pack after hard rains. A plow pan forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the plow pan.

Most of the acreage of this Tippah soil is used for pasture. A large acreage is used as woodland.

This soil is poorly suited to row crops, truck crops, and small grain. The slope and the severe hazard of erosion are the major management concerns. The productivity has been greatly reduced as the result of past severe erosion. The seasonal wetness may delay tillage operations in spring. Conservation tillage, cover crops, grassed waterways, terraces, contour stripcropping, vegetated filter strips, and contour farming help to control erosion in cultivated areas. Crop rotation helps to control erosion, increases the content of organic matter, and improves the utilization of moisture. Returning crop residue to the soil improves soil fertility and tilth and reduces crusting.

This soil is suited to grasses and legumes for hay and pasture. Using this soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the soil and pasture in good condition.

This soil is well suited to woodland. Most wooded areas consist of a mixture of hardwoods and pine trees, except where management practices have favored selected kinds of trees. The trees preferred for planting include sweetgum, loblolly pine, and cherrybark oak. Plant competition is the major management concern. If pine trees are planted, mechanical site preparation reduces the competition from undesirable plants. Cutting weeds, sprouts, and brush and girdling trees reduce the competition from unwanted plants. Applications of an approved herbicide control the subsequent regrowth of unwanted plants and help seedlings become established. Logging during the drier periods minimizes soil compaction and helps to prevent the formation of ruts that accelerate the rate of erosion. Hardwood timber stands can be improved by leaving preferred trees for seed production and removing unwanted trees.

This soil has good potential as habitat for openland and woodland wildlife. It has very poor potential as habitat for wetland wildlife.

The seasonal wetness, the slope, and the high shrink-swell potential are moderate limitations on sites for residential buildings. The slope is a severe limitation on sites for small commercial buildings. The low strength is a severe limitation on sites for local roads. Special designs and proper construction help to overcome some of these limitations. Erosion is a hazard in areas that have been cleared for construction. However, designing roads and dwellings that conform to the natural slope minimizes the amount of land shaping needed and thus erosion is held to a minimum. Revegetating the construction area also helps to control erosion. The slow permeability in the clayey layers of the lower part of the subsoil and the seasonal wetness are severe limitations for septic tanks and subsurface waste-water disposal systems. A specially designed subsurface waste-water disposal system or an alternate system helps to overcome the limitations.

This Tippah soil is in capability subclass VIe and in woodland suitability group 8A.

Ur—Urban land. Most of the acreage in this map unit is in and around Booneville. The areas mostly consist of altered or reworked soil material. In most areas, the surface is covered by commercial areas, residential developments, or public service areas and by paved parking lots and adjoining streets. The developments so obscure the land that a soil profile cannot be identified in most areas.

This map unit is not assigned a capability class or a woodland suitability group.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. The moisture supply must be adequate, and the growing season must be sufficiently long. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They are used for food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Prime farmland soils usually receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are frequently flooded during the growing season. The slope ranges mainly from 0 to 5 percent. About 77,224 acres, or about 29 percent of the area in Prentiss County, meets the requirement for prime farmland.

The map units, or soils, that make up prime farmland in Prentiss County are listed in table 5. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

Some soils that have a high water table and all soils that are frequently flooded during the growing season qualify as prime farmland only in areas where these limitations have been overcome by drainage measures or flood control. If applicable, the need for these measures is indicated in parentheses after the map unit name in the table. Onsite evaluation is necessary to determine if the limitations have been overcome by corrective measures.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Phillip J. Parvis, district conservationist, and Joel D. Summers, conservation agronomist, Natural Resources Conservation Service, helped to prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Natural Resources Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Prentiss County has approximately 100,000 acres of crops and pasture or hay. About 70,000 acres is used for row crops. Approximately 25,000 acres of row crops is grown in sloping areas, and the remaining 45,000 acres is grown in areas of soils on flood plains. About 30,000 acres is used for pasture or hay.

Soil fertility is naturally low in most of the soils in the county. All of the soils but Catalpa, Leeper, Marietta, and Sumter soils are naturally acid. Most of the soils in the uplands or on flood plains in the Coastal Plain land resource area are very strongly acid or strongly acid. The soils on flood plains have a naturally higher content of plant nutrients than most soils in the uplands. Most of the upland soils have low levels of available phosphorus and potash. On all of the soils, applications of lime and fertilizer should be based on results of soil tests and the expected level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of lime and fertilizer to apply.

The major row crops produced in the county are cotton, corn, soybeans, grain sorghum, and soft red winter wheat. The productivity of the soil is reduced as the surface layer is lost through erosion and part of the subsoil is mixed with the plow layer. Loss of the surface layer is especially damaging to the soils that have a fragipan, which limits the depth of the rooting zone. Soils that have a fragipan include Dulac, Providence, Quitman, and Savannah soils.

The kind of soil, the percent and length of the slope, and the degree of past erosion determine the type of conservation practices that are needed in sloping areas

of cropland. Conservation practices needed may include a no-till cropping system, minimum tillage, terraces, and contour farming.

Lateral ditches and surface field ditches help to remove excess surface water from many of the soils on flood plains. Grade stabilization structures also help to safely remove surface water from some fields. Diversions help to protect the soils on bottom land from runoff from the adjoining hills. Arkabutla, Catalpa, Chenneby, Kirkville, Leeper, Mantachie, and Marietta soils are examples of soils on flood plains. Surface drainage is also helpful in areas of the poorly drained Bibb, Kinston, and Rosebloom soils.

The major forage crops grown in the county include common bermudagrass, hybrid bermudagrass, and tall fescue. Legumes, such as white clover, red clover, crimson clover, and lespedeza, are grown in combination with grasses in some areas. The local office of the Natural Resources Conservation Service or the Cooperative Extension Service can help to determine the species of grass or legumes suited to a particular type of soil.

The management practices needed for forage and pasture include rotation grazing and the maintainence of a minimum grazing height of two to three inches.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode, but they have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one

class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless a close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry. None of the soils in Prentiss County are in subclasses c or s.

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w.*

The capability classification of each map unit is given in the section "Detailed Soil Map Units."

Woodland Management and Productivity

W. A. Hannaford, forester, and Paul Dillard, forester, helped to prepare this section.

Approximately 132,500 acres, or about 45 percent, of the total land area in Prentiss County is commercial forest land *(10).* Commercial forest land is defined as forest that is producing or is capable of producing crops of industrial wood and that has not been withdrawn from timber use *(13).* The commercial forest has various types of owners. A total of 62,000 acres is privately owned; 10,600 acres is owned by forest industry; and 59,900 acres is owned by farmers *(10).*

The commercial forest may be subdivided into forest types that require various management and treatment practices. Forest types are based on species composition, site quality, or age *(13).* In this survey, forest types are stands of trees that are composed of the same species and grow under the same ecological and biological conditions. The forest types are named for the tree species that predominate.

The forest types in Prentiss County include 48,800 acres, or about 40 percent of the total acreage of woodland, of oak-hickory-pine; 38,700 acres, or about 32 percent, of loblolly-shortleaf pine; 19,500 acres, or about 16 percent, of oak-pine; 9,800 acres, or about 8 percent, of oak-gum cypress; and 4,900 acres, or about 4 percent, of longleaf-slash pine *(13).*

On the soils in the uplands, the main potential vegetation type is the oak-hickory-pine forest type *(3).* In this forest type *(12),* the major oak species include white oak, black oak, southern red oak, chestnut oak, and scarlet oak. Species of hickory include mockernut hickory, shagbark hickory, and bitternut hickory. Other hardwoods include yellow-poplar, ashes, elms, red maple, black gum, black cherry, and others. Shortleaf pine and loblolly pine are significant components on suitable sites. However, much of the present forest cover in the uplands represents transitional stages *(12)* of the successional pattern from an essentially pine-dominated forest type to a forest type that is dominated by oaks, hickories, and other hardwoods. Pines invade abandoned fields and become established. Shade-tolerant hardwoods invade the pine stands, gradually increasing in number. The pines cannot successfully compete with the hardwoods for sunlight and moisture. Under natural conditions and over a long period of time, the pine-dominated stands evolve into oak-pine stands, which eventually are mostly replaced by oaks, hickories, and other hardwoods. Standing forest cover types are the result of disturbances, including selective cutting and other management practices, fire, disease, insect infestation, and browsing livestock. The original vegetation on upland soils that overlie chalk consisted of mixed stands of deciduous trees and eastern redcedar interspersed with bald prairies in areas where the chalk bed was near the surface. The dominant trees included post oak, blackjack oak, wild plum, persimmon, upland hickories, chinkapin oak, and honey locust *(6).* Abandoned fields that have shallow soils overlying chalk revert, by old field succession, to brushy hardwood cover that has large amounts of post oak and Osage-orange and some eastern redcedar in thickets and growing individually.

The soils on the flood plains of streams and minor drainageways originally supported forests of bottom land hardwoods. Better drained soils supported mixed stands of hardwoods, including yellow-poplar, hackberry, elms, green ash, sweetgum, overcup oak, and water hickory. Soils that are poorly drained, which are mainly in depressions and sloughs, supported stands dominated by water-tolerant species, including cypress, tupelo gum, and red maple.

Climate and soils are the most important environmental factors that influence tree growth and frequency of occurrence. Soil is the medium in which a tree is anchored, and it supplies the tree with nutrients and moisture. Soil characteristics, such as chemical composition, texture, structure, depth, and position, affect the growth of a tree to the extent to which they affect the supply of moisture and nutrients.

Slope position strongly influences species composition in a forest. Moisture-loving species, such as sweetgum and yellow-poplar, thrive on moderately moist, well drained, loamy soils on lower to middle slopes and in areas adjoining streams. Species such as

oak, hickory, and pine grow well on soils on middle slopes and ridges.

Good forest management practices help to maintain or improve soil productivity and water quality. Forest management activities, such as timber harvesting and site preparation, have the greatest potential for affecting soil productivity and water quality. Careless application of these practices can cause erosion, deplete nutrients, and result in soil compaction. Site-specific forest management practices that account for topography, time, natural site fertility, and the hazard of erosion help to prevent damage to soil and water resources *(9)*.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. The common forest understory plants also are listed. Table 7 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate,* and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

The table lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of a soil for the indicator species in cubic meters per hectare. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *R* indicates a soil that has a significant limitation because of steepness of slope. The letter *X* indicates that a soil has restrictions because of stones or rocks on the surface. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *T* indicates a soil that has, within the root zone, excessive alkalinity or acidity, sodium salts, or other toxic substances that limit the development of desirable trees. The letter *D* indicates a soil that has a limitation because of a restricted rooting depth, such as a shallow soil that is underlain by hard bedrock, a hardpan, or other layers that restrict roots. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the profile. The letter *S* indicates a dry, sandy soil. The letter *A* indicates a soil having no significant limitations that affect forest use and management. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, and S.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation or harvesting activities expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion-control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of moderate or severe indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning harvesting and reforestation activities, and the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest managment equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, and susceptibility of the surface layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment is needed. On the steepest slopes, even tracked equipment cannot be operated and more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use from 2 to 6 months per year, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment for more than 6 months per year, or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the periods when the water table is high, and rooting depth. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is

between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

Ratings of *plant competition* indicate the likelihood of the growth or invasion of undesirable plants. Plant competition is more severe on the more productive soils, on poorly drained soils, and on soils having a restricted root zone that holds moisture. The risk is *slight* if competition from undesirable plants hinders adequate natural or artificial reforestation but does not necessitate intensive site preparation and maintenance. The risk is *moderate* if competition from undesirable plants hinders natural or artificial reforestation to the extent that intensive site preparation and maintenance are needed. The risk is *severe* if competition from undesirable plants prevents adequate natural or artificial reforestation unless the site is intensively prepared and maintained. A moderate or severe rating indicates the need for site preparation to ensure the development of an adequately stocked stand. Managers must plan site preparation measures to ensure reforestation without delays.

The *potential productivity* of *common trees* on a soil is expressed as a *site index* and a *productivity class*. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands.

The *productivity class* is the yield likely to be produced by the most important trees, expressed in cubic meters per hectare per year. Cubic meters per hectare can be converted to cubic feet per acre by multiplying by 14.3. It can be converted to board feet by multiplying by a factor of about 71. For example, a productivity class of 8 means the soil can be expected to produce 114 cubic feet per acre per year at the age of culmination of mean annual increment, or about 568 board feet per acre per year.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Woodland Understory Vegetation

David W. Sanders, resource conservationist, Natural Resources Conservation Service, helped to prepare this section.

Understory vegetation consists of grasses, forbs, shrubs, and other plants. If well managed, some woodland can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation vary with the kind of soil, the age and kind of trees in the canopy, the density of the canopy, and the depth and condition of the litter. The density of the canopy determines the amount of light that understory plants receive.

Significant changes in the types and abundance of understory plants occur as the canopy changes, often regardless of grazing use. Forage value ratings are based on the percentage of the existing understory plant community made up of preferred and desirable plant species as they relate to livestock palatability.

Table 8 shows, for each soil suitable for woodland, the potential for producing understory vegetation. The total production of understory vegetation includes only the herbaceous plants. It is expressed in pounds per acre of air-dry vegetation in normal years. In a favorable year, soil moisture is above average during the optimum part of the growing season.

The table also lists the common names of the characteristic vegetation on each soil and the *composition*, by percentage of air-dry weight, of each kind of plant. The table shows the kind and percentage of understory plants expected under a medium canopy density (30 to 55 percent shade) that is most nearly typical of woodland in which the production of wood crops is highest.

Recreation

In table 9, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent

and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in the table can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes, stones, or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface (fig. 25).

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Harvey G. Huffstatler, wildlife biologist, Natural Resources Conservation Service, helped to prepare this section.

Prentiss County has a diversity of land uses, which provides habitat for a wide variety of openland and woodland wildlife species. Small game animals, such as cottontail rabbits, squirrels, mourning doves, bobwhite quail, raccoons, and opossums, generally are abundant. The populations of whitetail deer and turkey are low, even though habitat is available to support much larger populations. The populations of waterfowl are limited because a relatively small acreage in the county consists of wetlands. Beaver impoundments and manmade water areas have good populations of wetland wildlife species, such as beaver, muskrat, mink, wood ducks, and numerous species of fish.

Wildlife populations are most significantly affected by human land uses. The types of row crops grown, the amount of idle land, and grassland and woodland management practices cause frequent changes in the types and populations of wildlife species.

The second most important factor affecting wildlife is the soil. Soils directly affect the kind and amount of vegetation that is available for use by wildlife as food and cover. If the soil has an adequate potential, desirable wildlife habitat can be created or improved by planting appropriate plants, by maintaining and managing the existing vegetation, or by promoting the natural establishment of the desired plant community. Many of the soils in Prentiss County have the potential for providing improved habitat.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management,

Figure 25.—A park in a gently rolling area of Luverne fine sandy loam, 5 to 8 percent slopes, severely eroded.

and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes

are tall fescue, lespedeza, and clover.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are ragweed, goldenrod, beggarweed, Johnsongrass, and partridge pea.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, plum, hawthorn, dogwood, hickory, and blackberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are sawtooth oak, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and cedar.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are American beautyberry, strawberry bush, and oakleaf hydrangea.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, pondweed, duckweed, rushes, and sedges.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are chalk, wetness, surface texture, slope, and permeability. Examples of shallow water areas are marshes, beaver ponds, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, mourning dove, meadowlark, field sparrow, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, kingfisher, thrushes, woodpeckers, squirrels, gray fox, raccoon, and whitetail deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, raccoon, muskrat, mink, otter, beaver, and cottonmouth water moccasin.

Engineering

Jimmy R. Crouch, agricultural engineer, Natural Resources Conservation Service, helped to prepare this section.

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure

aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm, dense layer; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock or to a cemented pan, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, depth to a high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to bedrock or to a cemented pan, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 12 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or

maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a high water table, depth to bedrock, and flooding affect absorption of the effluent. Bedrock or a cemented pan interferes with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to bedrock, flooding, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope and bedrock can cause construction problems.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, depth to a water table, slope, and flooding affect both types of landfill. Texture and soil reaction affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential and slopes of 15 to 25 percent. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by gravel, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, gravel, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They have little or no gravel and have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant nutrients as it decomposes.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table. Depth to bedrock affects the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by depth to bedrock. The performance of a system is affected by the depth of the root zone and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Wetness, slope, and depth to bedrock affect the construction of grassed waterways. Low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 19.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

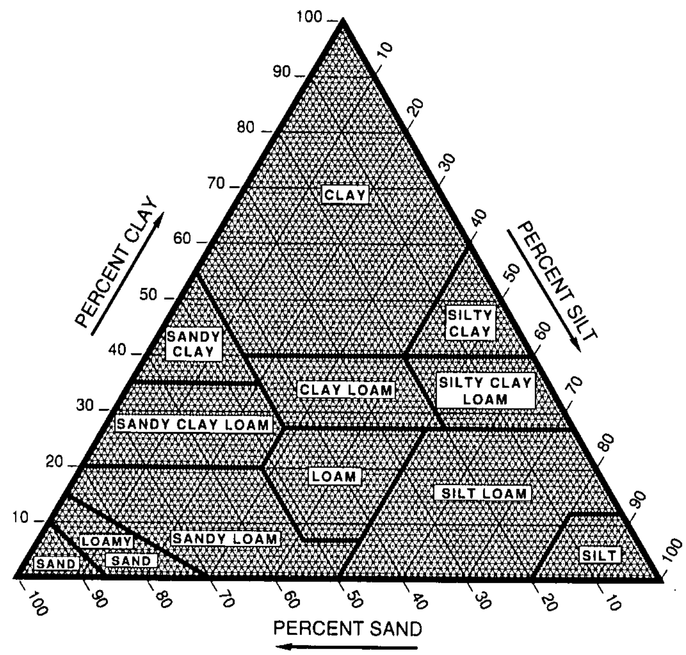

Figure 26.—The percentages of clay, silt, and sand in the basic textural classes.

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand (fig. 26). If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and

clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection. No areas of highly organic soils are recognized in Prentiss County.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 19.

Rock fragments 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at ⅓-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and

is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as *none, rare, occasional,* or *frequent. None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather

conditions (the chance of flooding is nearly 0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than a 50 percent in any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in the table are the depth to the seasonal high water table; the kind of water table, that is, *perched, artesian*, or *apparent*; and the months of the year that the water table commonly is highest. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate*, or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

Physical and Chemical Analyses of Selected Soils

D.E. Pettry, professor of soil science, Mississippi State University, prepared this section.

The results of physical and chemical analyses of typical pedons in the survey area are given in table 18. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Soil Genesis and Morphology Laboratory, Mississippi Agricultural and Forestry Experiment Station.

The physical properties of soils, such as infiltration rate and conduction, shrink-swell potential, crusting, consistence, and available water capacity, are closely related to soil texture, or the percentage of sand, silt, and clay.

The very deep, sloping loamy soils in the uplands, such as Smithdale and Ruston soils, have a high content of sand. The coarse textured surface layer enhances the rapid infiltration of water, and the soils tend to be droughty. Soils that have a high content of

silt in the surface layer, such as Guyton soils, tend to pack when cultivated. They form a crust, which may affect the growth of plants.

Soil chemical properties in combination with other soil features, such as permeability, structure and texture, influence the limitations and potential of individual soils. Chemical properties are not evident during visual observations of a soil; laboratory analyses are necessary to determine these properties.

The amount and type of clay minerals present and the content of organic matter largely determine the chemical nature of soils. The clay and organic material have the capacity to attract and hold cations. Exchangeable cations are positively charged elements that bond to negatively charged clay minerals and organic matter.

The exchangeable cations may be removed or exchanged through leaching or by plant uptake. Through the process of cation exchange, the soil acidity is corrected by applications of lime. One milliequivalent per 100 grams of extractable acidity requires 1,000 pounds of calcium carbonate (lime) per acre to neutralize it.

Soil chemical data are expressed as milliequivalents (meq) per 100 grams of dry soil. Milliequivalents per 100 grams of the various cations can be converted to the common unit of pounds per acre for the surface plow layer. An acre of the plow layer, or topsoil, of average soils to a depth of 6.67 inches weighs about 2 million pounds. The conversions for the cations listed in table 19 are as follows: pounds per acre of calcium equals meq/100 grams multiplied by 400; pounds per acre of magnesium equals meq/100 grams multiplied by 240; pounds per acre of potassium equals meq/100 grams multiplied by 780; and pounds per acre of sodium equals meq/100 grams multiplied by 460.

Many of the soils in Prentiss County are acid. They have a moderate to relatively low capacity to retain plant nutrients, or cations, because of the influence of siliceous parent material. Crops growing in areas of these soils respond to proper fertilization and management practices. Clayey, montmorillonitic soils of the Blackland Prairie, such as Kipling and Leeper soils, have a high cation-exchange capacity and have relatively high levels of calcium.

Base saturation is related to weathering, and it reflects the replacement of bases by hydrogen. Guyton soils on level, silty stream terraces have higher levels of sodium in the subsoil and have a higher base saturation level.

The soil taxonomy system used in the National Cooperative Soil Survey uses chemical soil properties as differentiating criteria in some categories of the system. The Alfisol and Ultisol orders, which are classes in the highest category of the system, are separated on the basis of percentage base saturation deep in the subsoil. Ultisols have a base saturation levels less than 35 percent in the lower part of the soil; in Alfisols, the values are more than 35 percent. For example, Savannah soils have a base saturation level less than 35 percent at a depth of more than 4 feet, and they are Ultisols.

Determinations were made on soil material smaller than 2 millimeters in diameter. The samples were prepared for analysis by air-drying, carefully crushing, and screening the sample through a standard 10-mesh sieve. Measurements that are reported as percent or quantity of unit weight were calculated on an oven-dry basis. The particle-size analysis shown in table 18 was obtained by using Day's hydrometer method *(4)*. The methods used in obtaining the other data are indicated in the list that follows. The codes in parenthesis refer to published methods *(14)*.

Extractable cations—ammonium acetate pH 7.0, uncorrected; calcium (6N2), magnesium (6O2), sodium (6P2), potassium (6Q2).

Extractable acidity—barium chloride-triethanslamine 1 (6H12).

Cation-exchange capacity—sum of cations (5A32).

Base saturation—sum of cations, TEA, pH 8.2 (5C3).

Reaction (pH)—1.1 water dilution (8C12).

Organic carbon—dichromate, ferric sulfate titration (6A12).

Engineering Index Test Data

Table 19 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The soil samples were tested by the Mississippi State Highway Department Testing Division, Jackson, Mississippi.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); Plasticity index—T 90 (AASHTO), D 4318 (ASTM); Moisture density—T 99 (AASHTO), D 698 (ASTM); Specific gravity—T 100 (AASHTO), D 854 (ASTM); California bearing ratio—T 193 (AASHTO), D 1883 (ASTM); and Shrinkage—T 92 (AASHTO), D 427 (ASTM).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(8)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fluvaquents (*Fluv*, meaning flood plain, plus *aquent*, the suborder of the Entisols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Fluvaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, siliceous, acid, thermic Typic Fluvaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series. Bibb series is an example of coarse-loamy, siliceous, acid, thermic Typic Fluvaquents in Prentiss County.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(15)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(8)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Arkabutla Series

The Arkabutla series consists of somewhat poorly drained, moderately permeable soils that formed in silty alluvium. These soils are in narrow depressional areas

on broad flood plains. Slopes range from 0 to 2 percent. Soils of the Arkabutla series are fine-silty, mixed, acid, thermic Aeric Fluvaquents.

Arkabutla soils are associated with Chenneby, Houlka, Mantachie, and Rosebloom soils on flood plains. Chenneby soils do not have a gray matrix within a depth of 20 inches. Houlka soils are in a fine-textured family. Mantachie soils are in a fine-loamy family. Rosebloom soils are in sloughs and depressional areas along drainageways and are poorly drained. They have a gray matrix below the A horizon.

Typical pedon of Arkabutla silt loam, occasionally flooded, in a cultivated area about 3.5 miles northeast of Jumpertown; about 1,540 feet west and 440 feet south of the northeast corner of sec. 19, T. 4 S., R. 7 E.

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable; common fine roots; slightly acid; abrupt smooth boundary.

Bw—7 to 15 inches; brown (10YR 5/3) silt loam; many medium distinct strong brown (7.5YR 5/6) and few fine faint dark grayish brown (10YR 4/2) mottles; moderate medium subangular blocky structure; friable; common fine and very fine roots; strongly acid; clear smooth boundary.

Bg1—15 to 30 inches; light brownish gray (10YR 6/2) silt loam; many medium prominent strong brown (7.5YR 5/6) and many fine faint yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; firm; few fine roots; strongly acid; gradual wavy boundary.

Bg2—30 to 46 inches; light brownish gray (10YR 6/2) silt loam; many medium prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; firm; few medium rounded black manganese concretions; strongly acid; gradual wavy boundary.

Bg3—46 to 61 inches; light brownish gray (10YR 6/2) silty clay loam; many medium prominent strong brown (7.5YR 5/6) and common medium faint yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; common fine rounded black and brown manganese concretions; strongly acid.

The solum is more than 40 inches thick. Reaction is very strongly acid or strongly acid, except in the surface layer of areas that have been limed.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. Some pedons have few or common mottles in shades of brown or gray. A thin A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2 in some pedons. It is less than 4 inches thick.

The Bw horizon has hue of 10YR, value of 4 or 5, chroma of 3 to 6, and few to many mottles with chroma of 2 or less; or it is mottled in shades of brown, yellow, and gray. Texture is silt loam or silty clay loam.

The Bg horizon has hue of 10YR or 2.5Y. It has value of 4 or 5 and chroma of 1 or has value of 6 and chroma of 2 or less. It commonly has few to many mottles in shades of brown. Texture is silt loam, loam, or silty clay loam.

Bibb Series

The Bibb series consists of poorly drained, moderately permeable soils that formed in stratified, loamy and sandy alluvium on flood plains. Slopes range from 0 to 2 percent. The soils of the Bibb series are coarse-loamy, siliceous, acid, thermic Typic Fluvaquents.

Bibb soils are associated with Iuka, Kirkville, Mantachie, and Rosebloom soils on flood plains. Iuka and Kirkville soils are moderately well drained and are in slightly higher areas or along channels. Mantachie soils, which are in a fine-loamy family, are somewhat poorly drained. They are in landscape positions similar to those of the Bibb soils. Rosebloom soils, which are in a fine-silty family, are in sloughs and depressions.

Typical pedon of Bibb sandy loam, frequently flooded, about 12.8 miles east of Booneville on State Highway 30, about 500 feet south on a gravel road, 150 feet west into woods; about 1,210 feet east and 720 feet south of the northwest corner of sec. 28, T. 5 S., R. 9 E.

Ap—0 to 8 inches; dark brown (10YR 4/3) sandy loam; weak medium granular structure; firm; common fine and medium roots; very few prominent organic stains on faces of peds; very strongly acid; abrupt smooth boundary.

Ag—8 to 15 inches; light brownish gray (10YR 6/2) loam; common medium distinct dark yellowish brown (10YR 4/4) and few fine prominent strong brown (7.5YR 5/8) mottles; weak medium granular structure; friable; common fine and medium roots; strongly acid; gradual wavy boundary.

Cg—15 to 30 inches; light brownish gray (10YR 6/2) fine sandy loam; common fine prominent yellowish brown (10YR 5/8) mottles; massive; friable; few fine roots; strongly acid; gradual wavy boundary.

Ccg—30 to 60 inches; light gray (2.5Y 7/2) loamy fine sand; many coarse prominent strong brown (7.5YR 5/8) mottles; massive; friable; many large rounded brown and black manganese concretions; strongly acid.

Reaction is very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 to 3.

The Ag has hue of 10YR or 2.5Y, value of 3 to 7, and chroma of 1 or 2. It commonly has few or common mottles in shades of brown or yellow.

The Cg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It has few to many mottles or strata in shades of red, brown, and yellow. The texture of the upper part of the Cg horizon is sandy loam, fine sandy loam, silt loam, or loam. Some pedons have thin strata of coarser textured material. The texture of the lower part is similar to that of the upper part, but it also is sand, loamy fine sand, or loamy sand. Some pedons have few to many black and brown concretions.

Catalpa Series

The Catalpa series consists of somewhat poorly drained, slowly permeable soils that formed in clayey alluvium. These soils are on the flood plains along streams that drain areas of the Blackland Prairie. Slopes range from 0 to 2 percent. The soils of the Catalpa series are fine, montmorillonitic, thermic Fluvaquentic Hapludolls.

Catalpa soils are associated with the Leeper and Marietta soils on the surface of flood plains. Leeper soils have an ochric epipedon. Marietta soils, which are in a fine-loamy family, are moderately well drained. They are in slightly higher areas closer to channels than the Catalpa soils.

Typical pedon of Catalpa silty clay, occasionally flooded (fig. 27), about 3.4 miles northwest of Booneville on State Highway 4, about 1.0 mile southeast on a county road, 300 feet south of the road in a field; about 1,190 feet east and 1,800 feet south of the northwest corner of sec. 1, T. 5. S., R. 6 E.

Ap—0 to 6 inches; very dark grayish brown (2.5Y 3/2) silty clay; moderate fine and medium granular structure; firm, sticky and plastic; strongly effervescent; moderately alkaline; abrupt smooth boundary.

A—6 to 15 inches; very dark grayish brown (2.5Y 3/2) silty clay; moderate fine subangular and angular blocky structure; firm, sticky and plastic; shiny stress surfaces on faces of some peds; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bw1—15 to 22 inches; dark grayish brown (2.5Y 4/2) silty clay; few fine distinct light olive brown (2.5Y 5/6) mottles; moderate fine and medium subangular and angular blocky structure; firm, very sticky and very plastic; shiny stress surfaces on faces of some peds; strongly effervescent; moderately alkaline; gradual wavy boundary.

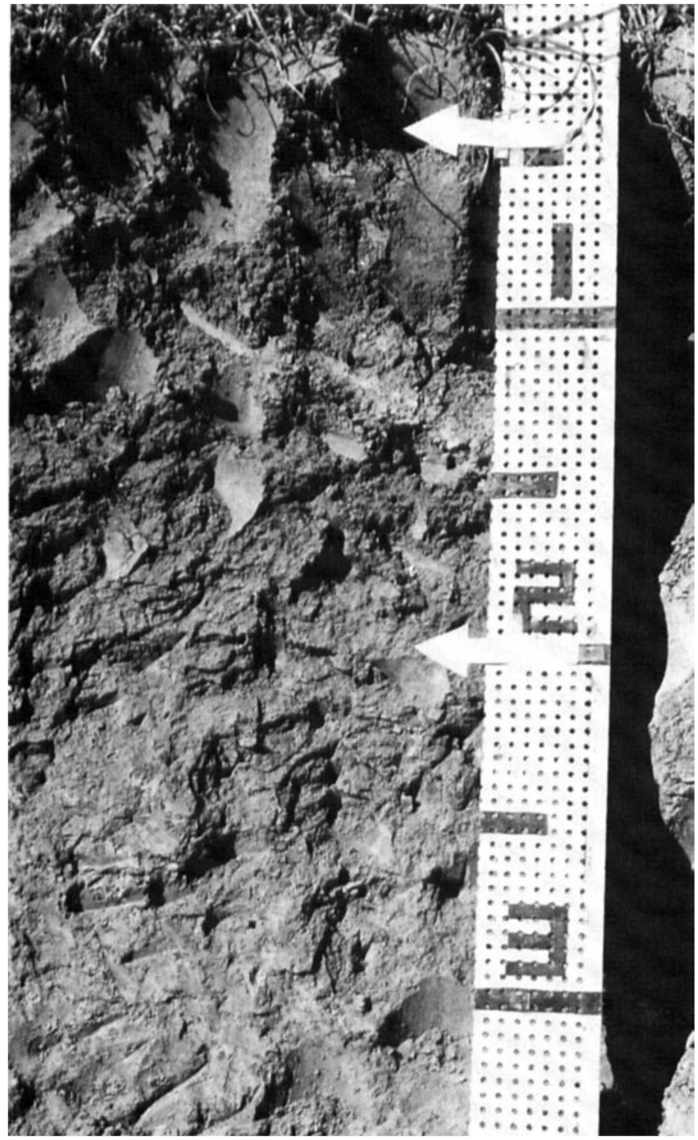

Figure 27.—A typical profile of Catalpa silty clay, occasionally flooded, showing a dark Ap horizon.

Bw2—22 to 38 inches; dark grayish brown (2.5Y 4/2) clay; common fine faint distinct light olive brown (2.5Y 5/6) mottles; moderate fine and medium subangular and angular blocky structure; firm, very sticky and very plastic; shiny stress surfaces on faces of some peds; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bw3—38 to 51 inches; mottled olive brown (2.5Y 4/4) and dark grayish brown (2.5Y 4/2) clay; moderate medium angular blocky structure; very firm, very

sticky and very plastic; few fine rounded brown and black manganese concretions; few medium angular calcium carbonate concretions; shiny stress surfaces on faces of some peds; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bw4—51 to 61 inches; mottled dark grayish brown (2.5Y 4/2), olive brown (2.5Y 4/4), and yellowish brown (10YR 5/6) clay; weak fine and medium angular blocky structure; very firm, very sticky and very plastic; few fine rounded brown and black manganese concretions; few medium and coarse angular calcium carbonate concretions; shiny stress surfaces on faces of some peds; strongly effervescent; moderately alkaline.

The thickness of the solum is more than 60 inches. Reaction is slightly acid to moderately alkaline throughout the profile.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2.

The upper part of the Bw horizon has hue of 10YR or 2.5Y, value of 4, and chroma of 2 or is mottled in shades of brown or gray. The lower part is mottled in shades of brown or gray. The texture of the Bw horizon is silty clay loam, silty clay, or clay. Some pedons have few or common calcium carbonate nodules and brown and black concretions.

Chenneby Series

The Chenneby series consists of somewhat poorly drained, moderately permeable soils that formed in silty alluvium on flood plains. Slopes range from 0 to 2 percent. The soils of the Chenneby series are fine-silty, mixed, thermic Fluvaquentic Dystrochrepts.

Chenneby soils are associated with Arkabutla, Houlka, Mantachie, and Rosebloom soils on flood plains. Arkabutla soils are in a fine-silty family. They have a gray matrix within a depth of 20 inches. Houlka soils are in a fine family. Mantachie soils are in a fine-loamy family. They are in landscape positions similar to those of the Chenneby soils. Rosebloom soils, which are in depressions and sloughs, are poorly drained. They have a gray matrix throughout the solum.

Typical pedon of Chenneby silt loam, occasionally flooded, about 3.0 miles northwest of Jumpertown, 800 feet north of gravel road; about 790 feet east and 880 feet south of the northwest corner of sec. 19, T. 4 S., R. 6 E.

Ap—0 to 7 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

Bw1—7 to 14 inches; brown (10YR 5/3) silt loam; common medium distinct pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine rounded black and yellowish brown concretions; strongly acid; gradual smooth boundary.

Bw2—14 to 22 inches; brown (10YR 5/3) silty clay loam; common coarse distinct strong brown (7.5YR 4/6) and few medium distinct light brownish gray (10YR 6/2) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; common fine rounded yellowish brown and black concretions; very strongly acid; gradual smooth boundary.

Bg1—22 to 36 inches; light brownish gray (10YR 6/2) silty clay loam; common coarse prominent strong brown (7.5YR 4/6) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; common fine rounded yellowish brown and black concretions; very strongly acid; gradual smooth boundary.

Bg2—36 to 50 inches; light brownish gray (10YR 6/2) silty clay loam; many medium prominent strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; many fine rounded black manganese concretions; few fine rounded brown concretions; very strongly acid; gradual wavy boundary.

Cg—50 to 62 inches; gray (10YR 6/1) silty clay loam; many medium distinct yellowish brown (10YR 5/6) mottles; massive; firm; many fine and medium rounded black and brown manganese concretions; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction in the A horizon is strongly acid or moderately acid, except in areas that have been limed. Reaction in the B and C horizons is very strongly acid to moderately acid.

The A horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 4. Some pedons have few or common mottles in shades of gray or brown.

The Bw horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. It has common or many mottles in shades of gray or brown. The mottles that have chroma of 2 or less are within a depth of 24 inches. The texture of the Bw horizon is silt loam or silty clay loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 or less. It has mottles in shades of brown. In some pedons, it is mottled in shades of gray, brown, and yellow. The texture of the Bg horizon is commonly silt loam or silty clay loam. It is loam in some pedons.

The Cg horizon has hue of 10YR to 5Y, value of 4 to

6, and chroma of 1 or 2. It commonly has few to many mottles in shades of brown and gray. The texture is commonly silty clay loam. It is silt loam in some pedons.

Dulac Series

The Dulac series consists of moderately well drained, slowly permeable soils that formed in a thin mantle of loess and the underlying clayey Coastal Plain sediments. These soils are on broad slopes in the uplands. They have a fragipan above the clayey material. Slopes range from 2 to 5 percent. The soils of the Dulac series are fine-silty, mixed, thermic Typic Fragiudalfs.

Dulac soils are associated with Kipling soils. Kipling soils, which are in a fine family, are somewhat poorly drained. They do not have a fragipan.

Typical pedon of Dulac silt loam, 2 to 5 percent slopes, eroded, about 2.5 miles west of Frankstown on State Highway 30, about 0.5 mile north on a paved county road, and 150 feet east into a field; about 980 feet east and 1,490 feet south of the northwest corner of sec. 10, T. 6 S., R. 6 E.

Ap—0 to 4 inches; dark brown (10YR 4/3) silt loam; few medium faint pockets of yellowish brown (10YR 5/4) material; weak fine granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

Bt1—4 to 12 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; common fine roots; common faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—12 to 20 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct strong brown (7.5YR 4/6) mottles; weak medium subangular blocky structure; friable; common distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Btx—20 to 36 inches; strong brown (7.5YR 4/6) silt loam; common medium prominent light brownish gray (10YR 6/2) mottles; weak very coarse prismatic structure parting to weak medium subangular blocky; prisms are coated with light brownish gray (10YR 6/2) silt; firm, compact, and brittle in more than 60 percent of the volume; common distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

2Bt1—36 to 52 inches; mottled gray (10YR 6/1), strong brown (7.5YR 5/6), and yellowish red (5YR 4/6) clay; moderate medium angular blocky structure; firm, sticky and plastic; few fine roots; common distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

2Bt2—52 to 60 inches; mottled gray (10YR 6/1), strong brown (7.5YR 5/6), yellowish red (5YR 4/6), and reddish brown (2.5YR 4/4) clay; moderate medium angular blocky structure; firm, sticky and plastic; few fine roots; common distinct clay films on faces of peds; very strongly acid.

The depth to the fragipan ranges from 16 to 26 inches. The depth to the 2Bt horizon ranges from 30 to 50 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. The lower part of the Bt horizon commonly has few or common brownish mottles. Texture is silt loam or silty clay loam.

The Btx horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 8. It has common or many grayish mottles. Some pedons have few to many mottles in shades of yellow, brown, and red. In some pedons, the horizon is mottled and does not have a dominant matrix hue. Texture is silt loam or silty clay loam.

The 2Bt horizon is mottled in shades of red, gray, and brown. Texture is silty clay or clay.

Guyton Series

The Guyton series consists of poorly drained, slowly permeable soils that formed in silty deposits. These nearly level soils are mainly in depressions on terraces and in low areas at the head of drainageways. Slopes are 0 to 1 percent. The soils of the Guyton series are fine-silty, siliceous, thermic Typic Glossaqualfs.

The Guyton soils in Prentiss County are outside the range of properties for the Guyton series because the texture of the B part of the B/E horizon is silty clay and the texture of the 2Btg horizon is loam. Also, the B part has reddish mottles. These differences, however, do not significantly affect the use and management of the soils.

Guyton soils are associated with Providence, Quitman, and Savannah soils on terraces. Providence and Savannah soils are moderately well drained. Quitman soils are somewhat poorly drained. Providence and Savannah soils have a fragipan.

Typical pedon of Guyton silt loam, about 0.5 mile south of Thrasher on Thrasher Road, 100 feet north of a county road, 40 feet southeast of a pecan tree in a field; about 270 feet north and 980 feet west of the southeast corner of sec. 23, T. 4 S., R. 7 E.

Ap1—0 to 5 inches; brown (10YR 4/3) silt loam; common fine distinct strong brown (7.5YR 5/6)

mottles; weak fine granular structure; friable; many fine and common medium roots; neutral; abrupt smooth boundary.

Ap2—5 to 9 inches; dark grayish brown (10YR 4/2) silt loam; few fine and medium faint grayish brown (10YR 5/2) and few fine distinct dark brown (7.5YR 4/4) mottles; weak fine granular structure; friable; common fine and few medium roots; few fine black (10YR 2/1) stains; slightly acid; abrupt smooth boundary.

Eg1—9 to 19 inches; light brownish gray (10YR 6/2) silt loam; common fine distinct dark brown (7.5YR 4/4) and few fine prominent strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; very friable; few fine roots; few fine black (10YR 2/1) and few fine strong brown (7.5YR 4/6) concretions; strongly acid; gradual wavy boundary.

Eg2—19 to 26 inches; light brownish gray (10YR 6/2) silt loam; common fine and medium prominent strong brown (7.5YR 5/6 and 4/6) mottles; weak fine subangular blocky structure; very friable; few fine roots; few fine and medium black (10YR 2/1) and strong brown (7.5YR 4/6) concretions; few light gray (10YR 7/1) silt pockets; very strongly acid; abrupt irregular boundary.

B/E1—26 to 33 inches; dark grayish brown (10YR 5/2) silty clay in the Bt part; common medium and coarse distinct strong brown (7.5YR 4/6) and fine and medium prominent red (2.5YR 4/6) mottles; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine and medium roots; many prominent clay films on faces of peds; about 15 percent of the horizon is gray (10YR 6/1) silt loam (E material) about ½ to 1½ inches wide that extends into the horizon below; moderate medium subangular blocky structure; firm; some faces of interior peds are coated with light gray (10YR 7/2) silt; very strongly acid; gradual wavy boundary.

B/E2—33 to 42 inches; grayish brown (10YR 5/2) silt loam in the Bt part; common medium and coarse distinct strong brown (7.5YR 4/6) and few fine and medium prominent red (2.5YR 4/6) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common prominent clay films on faces of peds; common fine pores; about 15 percent of the horizon is tongues of light gray (10YR 7/2) silt loam (E material) as much as 2 inches wide in places; moderate medium subangular blocky structure; firm; very strongly acid; gradual smooth boundary.

2Btg1—42 to 55 inches; grayish brown (10YR 5/2) loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to weak fine and medium subangular blocky; firm; few fine roots; common distinct clay films on faces of peds; gray (10YR 6/1) silt coatings on vertical faces of peds and in seams between faces of prisms; common fine rounded strong brown (7.5YR 4/6) iron and black (10YR 2/1) manganese concretions; very strongly acid; clear smooth boundary.

2Btg2—55 to 67 inches; light brownish gray (10YR 6/2) loam; common medium prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; firm; few distinct clay films on faces of peds; few fine rounded strong brown (7.5YR 4/6) concretions; gray (10YR 6/1) silt coatings on vertical faces of peds and in seams between prisms; very strongly acid; gradual smooth boundary.

2Btg3—67 to 84 inches; light brownish gray (10YR 6/2) clay loam; common medium prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; weak medium subangular blocky; firm; few fine seams of gray (10YR 6/1) clay; few pockets of sandy material; strongly acid.

The thickness of the solum ranges from 50 to about 80 inches. The content of exchangeable sodium is less than 5 percent to more than 10 percent in the lower part of the solum. Reaction in the surface layer, subsurface layers, and subsoil is very strongly acid to medium acid, except in the surface layer of areas that have been limed.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 or 3.

The Eg horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2. It has few to many mottles in shades of brown. Texture is silt loam, loam, or very fine sandy loam. The lower boundary of the E horizon is clear irregular or abrupt irregular. Tongues of E material extend into the Bt horizon.

The B part of the B/E horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It has mottles in shades of brown or red. Texture is silt loam, silty clay loam, clay loam, or silty clay. The E part of the B/E horizon has colors and textures similar to those of the Eg horizon.

The Btg horizon and the 2Btg horizon have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It has few to many mottles in shades of brown or gray. Texture is loam, silty clay loam, or clay loam.

Houlka Series

The Houlka series consists of somewhat poorly drained, very slowly permeable soils that formed in

clayey alluvium. These soils are on flood plains along streams that drain areas of the Blackland Prairie. Slopes range from 0 to 2 percent. The soils of the Houlka series are fine, montmorillonitic, acid, thermic Vertic Haplaquepts.

Houlka soils are associated with Arkabutla, Chenneby, Mantachie, and Rosebloom soils on flood plains. Arkabutla and Chenneby soils are in a fine-silty family. They are in landscape positions similar to those of the Houlka soils. Rosebloom soils, which also are in a fine-silty family, are poorly drained. They are in lower positions in sloughs and depressions. Mantachie soils, which are in a fine-loamy family, are mainly along overflow channels near the main stream channels.

Typical pedon of Houlka clay loam, occasionally flooded, about 2.5 miles northeast of Marietta, 0.3 mile east of a paved county road, 100 feet south of a road in a field, 600 feet west of Brown Creek; about 1,410 feet west and 240 feet south of the northeast corner of sec. 27, T. 6 S., R. 8 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) clay loam; moderate medium granular structure; friable, sticky and plastic; many very fine and fine roots; strongly acid; abrupt smooth boundary.

Bw1—6 to 15 inches; dark grayish brown (10YR 4/2) clay loam; many coarse faint grayish brown (2.5Y 5/2), common medium prominent strong brown (7.5YR 5/6), and few fine distinct dark brown (7.5YR 3/4) mottles; moderate medium subangular blocky structure; firm, slightly sticky and slightly plastic; common fine and very fine roots; few medium rounded brown and black manganese concretions; strongly acid; clear wavy boundary.

Bcg—15 to 42 inches; gray (5Y 6/1) clay; common medium prominent strong brown (7.5YR 5/6) and few fine prominent strong brown (7.5YR 4/6) mottles; moderate coarse angular blocky structure; very firm, very sticky and very plastic; many coarse rounded brown and black manganese concretions; common stress surfaces on faces of peds; few faint slickensides; strongly acid; gradual wavy boundary.

Bcssg—42 to 60 inches; gray (5Y 6/1) clay loam; many medium prominent strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure; firm, very sticky and very plastic; many coarse rounded brown and black manganese concretions; common stress surfaces on faces of peds; common faint slickensides that have slight striations on the surface; strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2.

The Bw horizon has hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2, and few to many mottles in shades of brown and gray; or it is mottled in shades of brown and gray. The Bg horizon has a matrix with hue of 10YR to 5Y, value of 5 or 6, and chroma of 1. Texture is clay, clay loam, silty clay, or silty clay loam. The Bssg horizon and the C horizon, if it occurs, have hue of 10YR to 5Y, value of 5 or 6, and chroma of 1 or 2. They have mottles in shades of brown or gray. Texture is clay, clay loam, or silty clay. Few to many brown and black concretions are throughout the B horizon.

Iuka Series

The Iuka series consists of moderately well drained, moderately permeable soils that formed in stratified, loamy and sandy alluvium on flood plains. Slopes range from 0 to 2 percent. The soils of the Iuka series are coarse-loamy, siliceous, acid thermic Aquic Udifluvents.

Iuka soils are associated with Bibb, Kirkville, Mantachie, and Rosebloom soils on flood plains. Bibb soils are poorly drained. They are in slightly lower positions in sloughs and depressions. Kirkville soils, which have a cambic horizon, are in landscape positions similar to those of the Iuka soils. Mantachie soils, which are in a fine-loamy family, have a gray matrix within a depth of 20 inches. They are on the slightly lower parts of the flood plain. Rosebloom soils, which are in a fine-silty family, are in lower positions in sloughs and depressions.

Typical pedon of Iuka fine sandy loam, occasionally flooded, about 100 feet west of Hurricane Creek, 150 feet south of a paved road; about 480 feet south and 1,230 feet west of the northeast corner of sec. 3, T. 6 S., R. 8 E.

Ap—0 to 6 inches; brown (10YR 4/3) fine sandy loam; weak medium granular structure; very friable; many fine roots; neutral; abrupt smooth boundary.

C1—6 to 10 inches; brown (10YR 5/3) fine sandy loam; massive; very friable; few fine roots; few discontinuous lenses of pale brown (10YR 6/3) loamy sand; neutral; gradual wavy boundary.

C2—10 to 23 inches; yellowish brown (10YR 5/4) sandy loam; few fine faint grayish brown (10YR 5/2) mottles; massive; friable; few fine roots; few bedding planes of grayish brown loamy sand; very strongly acid; clear smooth boundary.

Cg1—23 to 48 inches; mottled light gray (10YR 6/1) and strong brown (7.5YR 5/6) loam; massive; friable; few thin discontinuous bedding planes of loamy fine sand and clay loam; few fine and

medium rounded black manganese concretions; strongly acid.

Cg2—48 to 60 inches; mottled light gray (10YR 6/1) and strong brown (7.5YR 5/6) clay loam; massive; firm; very strongly acid.

Reaction is very strongly acid or strongly acid, except in the surface layer of areas that have been limed. Thin bedding planes of contrasting textures are common in most pedons.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is sandy loam or fine sandy loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. Some pedons have few to many mottles in shades of brown and gray. Mottles that have chroma of 2 or less are within a depth of 20 inches. Texture is sandy loam, fine sandy loam, or loam. Some pedons have thin strata of coarser textured material.

The Cg horizon has hue of 10YR or 2.5YR, value of 5 or 6, chroma of 2 or less, and mottles in shades of gray, brown, or red; or it is dominantly gray and has mottles in shades of brown or red. The texture of the upper part of the Cg horizon is sandy loam, fine sandy loam, or loam. In some pedons, it has thin discontinuous strata of coarser or finer material. The texture of the lower part is similar to the upper part, but it is also clay loam or sandy clay loam below a depth of 40 inches. Few or common black and brown concretions are in the Cg horizon. Some pedons have a buried A horizon below a depth of 40 inches.

Kinston Series

The Kinston series consists of poorly drained, moderately permeable soils that formed in stratified loamy alluvium on flood plains. Slopes range from 0 to 2 percent. The soils of the Kinston series are fine-loamy, siliceous, acid, thermic Typic Fluvaquents.

Kinston soils are associated with Bibb, Iuka, Kirkville, Mantachie, and Rosebloom soils on flood plains. Bibb soils, which are in a coarse-loamy family, are in landscape positions similar to those of the Kinston soils. Iuka and Kirkville soils, which are in a coarse-loamy family, are moderately well drained. They are in slightly higher positions, mainly near incised channels. Mantachie soils, which are in a fine-loamy family, are somewhat poorly drained. They are generally closer to incised channels than the Kinston soils. Rosebloom soils are in a fine-silty family and are in lower positions in sloughs and depressions.

Typical pedon of Kinston loam, frequently flooded, about 300 feet northeast of a paved county road in a wooded area; about 600 feet east and 810 feet south of the northwest corner of sec. 1, T. 7 S., R. 8 E.

A1—0 to 4 inches; dark gray (10YR 4/1) loam; moderate medium granular structure; friable; many fine and medium roots; few pockets of black organic accumulations in root channels; very strongly acid; clear wavy boundary.

A2—4 to 13 inches; gray (10YR 5/1) loam; few medium prominent brownish yellow (10YR 6/6) mottles; weak medium granular structure; friable; many fine and medium roots; strongly acid; clear wavy boundary.

Cg1—13 to 45 inches; light gray (10YR 6/1) clay loam; common fine prominent yellowish brown (10YR 5/8) mottles; massive; friable; few medium roots; strongly acid; gradual smooth boundary.

Cg2—45 to 60 inches; gray (10YR 5/1) clay loam; many coarse prominent strong brown (7.5YR 5/8) mottles; massive; firm, slightly sticky and slightly plastic; strongly acid; gradual smooth boundary.

Cg3—60 to 70 inches; gray (10YR 5/1) loam; common medium prominent strong brown (7.5YR 5/6) and few medium faint light gray (10YR 7/1) mottles; massive; firm; strongly acid.

Reaction is very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It has few to many mottles in shades of brown, gray, and yellow. Texture is sandy clay loam, loam, or clay loam.

Kipling Series

The Kipling series consists of somewhat poorly drained, very slowly permeable soils. They are on gently sloping to steep uplands in the Blackland Prairie. These soils formed in acid clayey deposits and the underlying weathered chalk. Slopes range from 2 to 40 percent. The soils of the Kipling series are fine, montmorillonitic, thermic Vertic Paleudalfs.

Kipling soils are associated with Dulac and Sumter soils in the uplands. Dulac soils, which are in a fine-silty family, are moderately well drained. They have a fragipan. Sumter soils are in a fine-silty family. They are well drained and overlie calcareous clay or weathered chalk within a depth of 40 inches.

Typical pedon of Kipling silty clay loam, 5 to 8 percent slopes, severely eroded, about 200 feet east of a county road, in a soybean field; about 920 feet east

and 2,490 feet north of the southwest corner of sec. 15, T. 5 S., R. 6 E.

Ap—0 to 3 inches; dark brown (10YR 4/3) silty clay loam; weak medium subangular blocky structure; friable; about 30 to 50 percent mottled pale brown (10YR 6/3) and red (2.5YR 5/6) subsoil material; sticky and plastic; many fine roots; slightly acid; abrupt smooth boundary.

Bt1—3 to 10 inches; mottled pale brown (10YR 6/3), red (2.5YR 5/6), and light brownish gray (10YR 6/2) clay; moderate medium angular blocky structure; very firm, very sticky and very plastic; common medium roots; common cracks and root holes filled with Ap material; common prominent clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—10 to 19 inches; mottled red (2.5YR 4/6) and light brownish gray (10YR 6/2) clay; moderate fine angular blocky structure; very firm, very sticky and very plastic; few fine roots; many prominent clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—19 to 33 inches; mottled light brownish gray (10YR 6/2), yellowish red (5YR 5/6), and yellowish brown (10YR 5/6) clay; moderate medium angular blocky structure; very firm, very sticky and very plastic; many distinct clay films on faces of peds; stress surfaces on faces of peds; few fine roots; strongly acid; gradual wavy boundary.

Btss—33 to 39 inches; mottled strong brown (7.5YR 5/6) and light brownish gray (10YR 6/2) clay; weak medium angular blocky structure; very firm, very sticky and very plastic; few fine roots; many distinct clay films on faces of peds; few coarse nonintersecting striated slickensides; strongly acid; gradual wavy boundary.

Bkssg—39 to 46 inches; light gray (10YR 7/1) clay; common medium distinct yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to weak medium angular blocky; very firm, very sticky and very plastic; common coarse polished and grooved slickensides; many fine to coarse calcium carbonate concretions; many fine black concretions; slightly alkaline; strongly effervescent; clear wavy boundary.

Bkss—46 to 60 inches; mottled light brownish gray (10YR 6/2), yellowish brown (10YR 5/6), and brown (10YR 5/3) clay; weak coarse prismatic structure parting to moderate fine and medium subangular and angular blocky; very firm, very sticky and very plastic; common coarse polished and grooved slickensides; many fine to coarse calcium carbonate concretions; many fine black concretions; moderately alkaline; violently effervescent.

The solum is more than 60 inches thick. The Bkss horizon is nonuniformly underlain by calcareous clay or partially decayed chalk. The depth to the differentially weathered chalk is irregular. It ranges from 60 to more than 80 inches. The calcium-magnesium ratio is more than 1.0. Reaction in the A, E, and Bt horizons is extremely acid to medium acid, except in the surface layer of areas that have been limed. Reaction in the Bss horizon is very strongly acid to moderately alkaline. Reaction in the Bk horizon commonly is neutral to moderately alkaline but is very strongly acid in areas between calcium carbonate concretions.

The A or Ap horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 4 or is neutral in hue and has value of 3 or 4 and chroma of 0. Some pedons have mottles in shades of yellow, brown, and red. The texture is silt loam or silty clay loam.

The upper part of the Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. It has few to many mottles that have chroma of 2 or less, or it is mottled in shades of yellow, brown, gray, and red. The lower part of the Bt horizon is mottled in shades of brown, red, and gray, or it has hue of 10YR to 5Y, value of 5 to 7, chroma of 1 or 2, and mottles in shades of brown, yellow, and gray. The texture of the Bt horizon is silty clay loam, silty clay, or clay.

The Btss and Bkss horizons are mottled in shades of yellow, red, brown, and gray or have hue of 10YR to 5Y, value of 5 to 7, chroma of 1 or 2, and mottles in shades of brown and yellow. Texture is silty clay or clay. Some pedons have few or common manganese concretions in the Btss horizon. The Bkss horizon has few to many manganese concretions. The Bkss horizon has common or many calcium carbonate concretions that are fine to very coarse.

Kirkville Series

The Kirkville series consists of moderately well drained, moderately permeable soils that formed in loamy alluvium on flood plains. Slopes range from 0 to 2 percent. The soils of the Kirkville series are coarse-loamy, siliceous, thermic Fluvaquentic Dystrochrepts.

Kirkville soils are associated with luka and Mantachie soils on flood plains. luka soils have thin strata within a depth of 20 inches. They are in landscape positions similar to those of the Kirkville soils. Mantachie soils have a gray matrix color within a depth of 20 inches. They are somewhat poorly drained and are in a fine-loamy family. They are in slightly lower landscape positions than the Kirkville soils.

Typical pedon of Kirkville fine sandy loam,

occasionally flooded, about 2.5 miles north of Altitude, 200 feet south of a gravel road, 50 feet west of a field road; about 370 feet east and 1,590 feet north of the southwest corner of sec. 26, T. 4 S., R. 8 E.

Ap—0 to 7 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; common very fine and fine roots; medium acid; abrupt smooth boundary.

Bw1—7 to 18 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; friable; few very fine and fine roots; few fine rounded black concretions; strongly acid; gradual smooth boundary.

Bw2—18 to 26 inches; yellowish brown (10YR 5/6) fine sandy loam; few medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; very friable; few fine roots; very strongly acid; gradual smooth boundary.

Bw3—26 to 46 inches; yellowish brown (10YR 5/6) fine sandy loam; many medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; very friable; few fine irregular black manganese concretions; very strongly acid; gradual smooth boundary.

Cg—46 to 60 inches; light brownish gray (2.5Y 6/2) fine sandy loam; many coarse prominent yellowish brown (10YR 5/6) and common fine prominent yellowish red (5YR 4/6) mottles; massive; very friable; few fine irregular red masses of iron accumulations; very strongly acid.

The solum ranges from 30 to more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. Mottles that have chroma of 2 or less are within a depth of 24 inches. In some pedons, the horizon is mottled throughout in shades of brown and gray. Texture is fine sandy loam, loam, or sandy loam.

Some pedons have a Bg horizon. It has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or less. Texture is loam, sandy loam, or fine sandy loam. Few to many concretions in shades of brown, red, or black are commonly in the lower part of the B horizon.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, chroma of 2 or less, and few to many mottles in shades of gray or brown; or it is mottled in shades of these colors. Texture is fine sandy loam, sandy loam, or loam.

Leeper Series

The Leeper series consists of somewhat poorly drained, very slowly permeable, nearly level soils that formed in clayey alluvium. These soils are on the flood plains along streams that drain areas of the Blackland Prairie. Slopes range from 0 to 2 percent. The soils of the Leeper series are fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts.

Leeper soils are associated with Catalpa and Marietta soils on the nearly linear surfaces of flood plains. Catalpa soils, which are somewhat poorly drained, have a mollic epipedon. They are in the back areas of flood plains adjacent to the uplands. Marietta soils, which are in a fine-loamy family, are moderately well drained. They are on slightly higher parts of the flood plain or are closer to incised channels.

Typical pedon of Leeper silty clay, occasionally flooded, about 0.7 mile northwest of Frankstown on a county road, 150 feet west in a field; about 20 feet east and 1,880 feet north of the southwest corner of sec. 2, T. 6 S., R. 6 E.

Ap—0 to 8 inches; brown (10YR 5/3) silty clay; moderate fine and medium subangular blocky structure; firm, sticky and plastic; neutral; abrupt smooth boundary.

Bw—8 to 15 inches; dark grayish brown (10YR 4/2) silty clay; few medium prominent strong brown (7.5YR 5/6) mottles; moderate fine and medium angular blocky and subangular blocky structure; firm, very sticky and very plastic; few stress surfaces on faces of peds; some Ap horizon material in cracks; neutral; gradual smooth boundary.

Bss1—15 to 30 inches; dark grayish brown (10YR 4/2) silty clay; many prominent strong brown (7.5YR 5/6) and grayish brown (10YR 5/2) mottles; weak coarse prismatic structure parting to moderate fine and medium subangular and angular blocky; firm, very sticky and very plastic; few stress surfaces on faces of peds; few medium striated slickensides; few fine black manganese concretions; moderately acid; gradual wavy boundary.

Bss2—30 to 60 inches; mottled gray (10YR 5/1) and strong brown (7.5YR 5/6) clay; weak coarse prismatic structure parting to weak fine and medium subangular and angular blocky; firm, very sticky and very plastic; few stress surfaces on faces of peds; few medium striated slickensides; few fine rounded black and brown manganese concretions; moderately acid.

The thickness of the solum is more than 60 inches. Reaction is medium acid to moderately alkaline

throughout the profile, except in the surface layer of areas that have been limed.

The A horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3.

The Bw and Bss horizons commonly have hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2, and few to many mottles in shades of brown and gray; or they are mottled in shades of these colors. Texture is clay, silty clay, or silty clay loam.

The Bssg horizon has hue of 10YR or 2.5Y, value of 4 to 7, chroma of 1 or 2, and mottles in shades of brown, yellow, and gray; or it is mottled in shades of these colors. Texture is clay, silty clay, silty clay loam, or clay loam. The horizon has few to many brown and black concretions.

Luverne Series

The Luverne series consists of well drained, moderately slowly permeable soils that formed in clayey Coastal Plain sediments that have discontinuous thin strata of silty and loamy material. These sloping to steep soils are on dissected uplands. Slopes range from 5 to 45 percent. The soils of the Luverne series are clayey, mixed, thermic Typic Hapludults.

Luverne soils are associated with Okeelala, Ruston, Smithdale, and Tippah soils in the uplands. Okeelala, Ruston, and Smithdale soils are in a fine-loamy family. They are in landscape positions similar to those of the Luverne soils on slopes in hilly areas in the uplands. Ruston soils also have a bisequum. The moderately well drained Tippah soils are in a fine-silty family. They commonly are in higher landscape positions on broader ridgetops.

Typical pedon of Luverne fine sandy loam, in an area of Okeelala, Luverne, and Smithdale sandy loams, 5 to 45 percent slopes, about 1.25 miles north of Wheeler on a county road, about 0.5 mile east on the county road, 400 feet south in an area wooded with a mixture of pine and hardwoods; about 2,250 feet west and 950 feet north of the southeast corner of sec. 32, T. 5 S., R. 7 E.

A—0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt wavy boundary.

E—4 to 12 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid; clear wavy boundary.

Bt1—12 to 24 inches; yellowish red (5YR 4/6) sandy clay; common fine faint red (2.5YR 4/8) and few fine prominent light olive brown (2.5Y 5/6) mottles; moderate medium subangular blocky structure; firm, sticky and plastic; few fine and medium roots; many distinct clay films on faces of peds and lining pores; few ferruginous coarse fragments; few fine mica flakes; very strongly acid; clear wavy boundary.

Bt2—24 to 35 inches; red (2.5YR 4/6) sandy clay loam; moderate medium angular blocky structure; firm, sticky and plastic; few fine roots; many distinct clay films on faces of peds; few fine mica flakes; very strongly acid; clear smooth boundary.

BC—35 to 46 inches; red (2.5YR 4/8) sandy clay loam; weak coarse subangular blocky structure; firm; few medium roots; few flakes of mica; few faint clay films on faces of peds; very strongly acid; abrupt smooth boundary.

C1—46 to 59 inches; red (2.5YR 4/6) sandy clay loam; many coarse faint grayish brown (2.5YR 5/4) and few fine prominent brown (10YR 5/3) mottles; massive; firm; thin discontinuous strata of loam; thin discontinuous horizontal ironstone layer; many fine flakes of mica; very strongly acid; gradual smooth boundary.

C2—59 to 70 inches; yellowish red (5YR 4/8) sandy clay loam that has few thin discontinuous strata of loam; massive; very strongly acid; gradual wavy boundary.

C3—70 to 76 inches; yellowish red (5YR 5/6) sandy clay loam that has lamellae of clay, very fine sandy loam, and silt loam in shades of red, brown, and gray; many fine mica flakes and glauconite sand; massive; firm; very strongly acid.

The thickness of the solum ranges from 20 to 50 inches. The depth to stratified sediments is less than 60 inches. Reaction is extremely acid to strongly acid, except in the surface layer of areas that have been limed. Some pedons have a few ironstone fragments and discontinuous ironstone layers.

The A horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4. Texture is sandy loam or fine sandy loam.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 4 to 6. Texture is sandy loam or fine sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 3 to 5, and chroma of 4 to 8. Some pedons have few or common mottles in shades of brown, olive, or red. The horizon has few or common mica flakes. In some pedons, the lower part of the Bt horizon is mottled in shades of red, yellow, and brown. Texture of the horizon is clay loam, sandy clay, or clay.

The C horizon is composed of stratified Coastal Plain sediments that have a high content of mica. Texture of the individual strata ranges from loamy sand to clay. The strata range from less than 0.25 inch to several

inches in thickness. Although colors are variable, the sandier textured strata are generally in shades of brown, red, and yellow, and the clayey strata are gray. Some pedons have lenses of ironstone in the upper part of the C horizon.

Mantachie Series

The Mantachie series consists of somewhat poorly drained, moderately permeable soils that formed in loamy alluvium on flood plains. Slopes range from 0 to 2 percent. The soils of the Mantachie series are fine-loamy, siliceous, acid, thermic Aeric Fluvaquents.

The Mantachie soils in Prentiss County are outside the range of properties for the Mantachie series because the reaction in the Bg and Cg horizons is lower than is definitive for the series. Also, the silt content in the B horizon is slightly higher than is typical for the series. The horizons are extremely acid in the Mantachie soils in Prentiss County. These differences, however, do not affect the use and management of these soils.

Mantachie soils are associated with Arkabutla, Bibb, Chenneby, Houlka, Iuka, Kirkville, and Rosebloom soils on flood plains. Arkabutla, Chenneby, and Rosebloom soils are in a fine-silty family. Arkabutla and Chenneby soils are in landscape positions similar to those of the Mantachie soils. The poorly drained Rosebloom soils are in lower areas in sloughs and depressions. The poorly drained Bibb soils are in a coarse-loamy family. They are in slightly lower landscape positions. Houlka soils are in a fine family. They are generally in broader areas that are farther from the active channels. The moderately well drained Iuka and Kirkville soils are in a coarse-loamy family. They are in slightly higher areas, mainly along channels.

Typical pedon of Mantachie fine sandy loam, occasionally flooded, 3 miles southwest of Marietta, 0.5 mile south of Highway 366 on a county road, 75 feet west in a field; about 120 feet west and 1,250 feet north of the southeast corner of sec. 12, T. 7 S., R. 7 E.

Ap—0 to 4 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; very friable; many very fine and fine roots; moderately acid; abrupt smooth boundary.

A—4 to 9 inches; brown (10YR 5/3) fine sandy loam; few fine distinct strong brown (7.5YR 4/6) mottles; weak fine and medium granular structure; very friable; many very fine and fine roots; strongly acid; clear smooth boundary.

Bw—9 to 17 inches; brown (10YR 5/3) silt loam; common medium faint yellowish brown (10YR 5/6) and few fine faint light brownish gray (10YR 6/2) mottles; weak medium granular and fine subangular blocky structure; friable; few fine roots; few fine rounded black and brown concretions; very strongly acid; clear smooth boundary.

Bg1—17 to 34 inches; light brownish gray (10YR 6/2) loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine irregular black and brown concretions; extremely acid; clear smooth boundary.

Bg2—34 to 43 inches; light brownish gray (10YR 6/2) loam; common medium prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; firm; extremely acid; gradual wavy boundary.

Cg—43 to 60 inches; light brownish gray (10YR 6/2) loam; common medium prominent strong brown (7.5YR 4.6) mottles; massive; firm; extremely acid.

The thickness of the solum ranges from 30 to 65 inches. Reaction in the A horizon and the upper part of the B horizon is very strongly acid or strongly acid, except in the surface layer of areas that have been limed. Reaction in the lower part of the B horizon and the C horizon is extremely acid to strongly acid.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 6.

The Bw horizon has hue of 10YR, value of 4 or 5, chroma of 2 to 6, and few to many mottles in shades or gray or brown; or it is mottled in shades of gray, brown, and yellow. The Bg horizon has hue to 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It has few to many mottles in shades of brown, yellow, or red. Texture of the B horizon commonly is loam. In some pedons it is clay loam or sandy clay loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It has mottles in shades of brown, yellow, or gray. Texture is clay loam, loam, or sandy clay loam.

Marietta Series

The Marietta series consists of moderately well drained, moderately permeable soils that formed in loamy alluvium. These soils are on flood plains along streams that drain areas of the Blackland Prairie. Slopes range from 0 to 2 percent. The soils of the Marietta series are fine-loamy, siliceous, thermic Fluvaquentic Eutrochrepts.

Marietta soils are associated with Catalpa and Leeper soils on flood plains. The somewhat poorly drained Catalpa and Leeper soils are in a fine family. They are in slightly lower positions in broader areas on the flood plains. Catalpa soils also have a mollic epipedon.

Typical pedon of Marietta fine sandy loam,

occasionally flooded, about 1.5 miles south of Booneville, 250 feet west of a county road, 100 feet south of Boyer Creek, in a field; about 380 feet west and 980 feet south of the northeast corner of sec. 29, T. 5 S., R. 7 E.

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium granular structure; friable; common fine roots; slightly acid; clear smooth boundary.

Bw1—6 to 10 inches; dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure; friable; common fine roots; common medium distinct dark brown stains along root channels; neutral; clear smooth boundary.

Bw2—10 to 18 inches; brown (10YR 5/3) sandy clay loam; few fine distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; few fine roots; common fine distinct dark brown stains along root channels; neutral; clear smooth boundary.

Bw3—18 to 28 inches; brown (10YR 5/3) sandy clay loam; common medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; firm; few fine roots; few dark brown stains along root channels; neutral; gradual smooth boundary.

Bw4—28 to 46 inches; mottled light brownish gray (10YR 6/2) and dark brown (7.5YR 4/4) sandy clay loam; weak medium subangular blocky structure; firm, slightly sticky and slightly plastic; common medium rounded black iron and manganese concretions and stains; slightly alkaline; gradual wavy boundary.

Cg—46 to 60 inches; light brownish gray (10YR 6/2) sandy clay loam that has many coarse prominent dark brown (7.5YR 4/4) mottles; massive; firm, slightly sticky and slightly plastic; few fine irregular black iron and manganese concretions; slightly acid.

The thickness of the solum ranges from 38 to 60 inches. Reaction is moderately acid to slightly alkaline, except in the surface layer of areas that have been limed.

The A horizon has hue of 10YR, value of 4, and chroma of 2 to 4.

The upper part of the Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Mottles that have chroma of 2 or less are within a depth of 24 inches. Some pedons have mottles in shades of brown. The lower part of the Bw horizon is mottled in shades of gray and brown, or it has colors similar to those of the Bw1 horizon but has more gray mottles. The Bg horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It is mottled in shades of brown, yellow, or gray. The texture of the B horizon is loam, sandy clay loam, clay loam, or silty clay loam. Few to many brown and black concretions are in the lower part of the B horizon.

The Cg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It has mottles in shades of brown, yellow, or gray. Texture is sandy clay loam, sandy clay, or clay loam.

Myatt Series

The Myatt series consists of poorly drained, moderately slowly permeable soils that formed in loamy sediments. These nearly level soils are on broad terraces and along some drainageways in the uplands. Slopes range from 0 to 2 percent. The soils of the Myatt series are fine-loamy, siliceous, thermic Typic Endoaquults.

Myatt soils are associated with Quitman and Savannah soils, which are on higher parts of the landscape than the Myatt soils. Quitman soils are somewhat poorly drained. Savannah soils are moderately well drained and have a fragipan.

Typical pedon of Myatt silt loam, frequently flooded (fig. 28), about 2.5 miles west of Marietta on Highway 366, 0.2 mile southwest on a gravel road, 250 feet north in a wooded area; about 1,700 feet west and 1,290 feet south of the northeast corner of sec. 12, T. 7 S., R. 7 E.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

Eg—3 to 8 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; friable; many fine roots; strong brown (7.5YR 4/6) stains along old root channels; strongly acid; gradual wavy boundary.

Btg1—8 to 22 inches; light brownish gray (10YR 6/2) loam; many medium prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; few roots; very strongly acid; gradual wavy boundary.

Btg2—22 to 45 inches; gray (10YR 6/1) clay loam; many medium distinct yellow (10YR 7/6) mottles; moderate medium subangular blocky; firm; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

Cg—45 to 60 inches; gray (10YR 6/1) clay loam; many medium distinct yellow (10YR 7/6) mottles; massive; firm; very strongly acid.

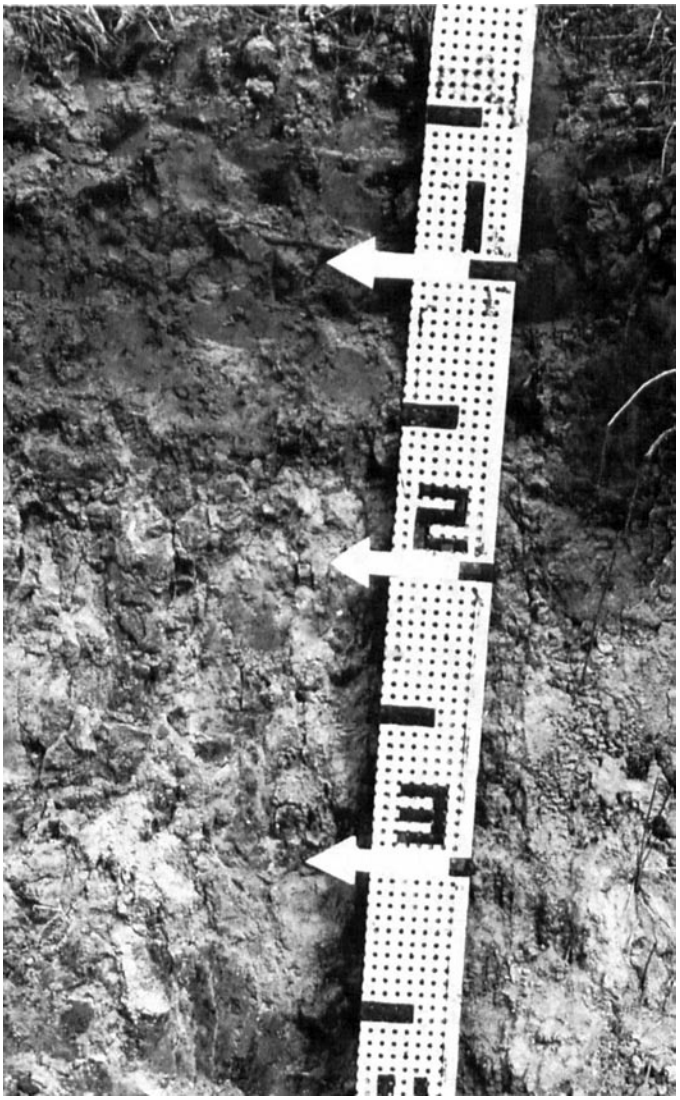

Figure 28.—A typical profile of Myatt silt loam, frequently flooded, showing a grayish Btg horizon that indicates poor drainage conditions.

The thickness of the solum ranges from 40 to about 60 inches. Reaction in the surface and subsurface layers and the upper part of the subsoil is very strongly acid or strongly acid, except in the surface layer of areas that have been limed. Reaction in the lower part of the subsoil and the underlying material is extremely acid to strongly acid.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 or 2.

The Eg horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. Texture is silt loam, loam, or fine sandy loam.

The Btg horizon has hue of 2.5Y or 10YR, value of 3 to 7, and chroma of 1 or 2. It has few to many mottles in shades of brown, red, or yellow. Texture is sandy clay loam, clay loam, or loam.

The Cg horizon commonly is gleyed with mottles. It has colors similar to those of the Btg horizon. Texture is sandy clay loam or clay loam.

Okeelala Series

The Okeelala series consists of well drained, moderately permeable soils that formed in loamy Coastal Plain deposits on hilly uplands. Slopes range from 2 to 45 percent. The soils of the Okeelala series are fine-loamy, siliceous, thermic Ultic Hapludalfs.

Okeelala soils are associated with Luverne, Ruston, Savannah, and Smithdale soils in the uplands. Luverne soils are in a clayey family. They are in landscape positions similar to those of the Okeelala soils. Ruston soils, which are in a fine-loamy family, are on ridgetops. They have a bisequum. The moderately well drained Savannah soils are on wider ridgetops. They have a fragipan. Smithdale soils have a solum more than 60 inches thick. They are on hillsides in landscape positions similar to those of the Okeelala soils.

Typical pedon of Okeelala sandy loam, in an area of Okeelala, Luverne, and Smithdale soils, 5 to 45 percent slopes, about 2.5 miles east of Baldwin, in a wooded area; 2,620 feet west and 2,320 feet north of the southeast corner of sec. 20, T. 6 S., R. 7 E.

A—0 to 3 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine and very fine roots; very strongly acid; gradual wavy boundary.

E—3 to 11 inches; yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; very friable; many fine and very fine roots; very strongly acid; gradual wavy boundary.

Bt1—11 to 22 inches; yellowish red (5YR 4/6) sandy clay loam; many medium faint reddish brown (5YR 5/4) mottles; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; common fine and very fine roots; strongly acid; gradual wavy boundary.

Bt2—22 to 34 inches; red (2.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; common distinct clay films on faces of peds and lining pores; strongly acid; gradual wavy boundary.

Bt3—34 to 48 inches; yellowish red (5YR 5/6) sandy clay loam that has common medium distinct strong brown (10YR 5/6) mottles; moderate medium subangular blocky structure; slightly firm in place,

friable when disturbed; few fine roots; few faint clay films on faces of peds and lining pores; few fine dark concretions; strongly acid; gradual wavy boundary.

C1—48 to 62 inches; yellowish red (5YR 4/6) sandy loam that has many medium distinct strong brown (10YR 5/6) mottles; massive; firm in place, friable when disturbed; strongly acid; gradual wavy boundary.

C2—62 to 80 inches; intermingled yellowish red (5YR 5/6) and yellowish brown (10YR 5/6) sandy loam; massive; slightly firm in place, friable when disturbed; common fine mica flakes and glauconite sand grains; strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed.

The A horizon commonly has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. Some pedons have a thin A horizon that has value of 3 and chroma of 2 or 3. The Ap horizon, if it occurs, has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. In severely eroded areas, the Ap horizon is mixed with material from the Bt horizon. It ranges from 4 to 8 inches in thickness. The texture of the A horizon is fine sandy loam or sandy loam.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It is sandy loam, fine sandy loam, loamy sand, or sand. Some pedons have a B/E or E/B horizon.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 8. Some pedons have few to many mottles in shades of red and brown. Texture is clay loam, sandy loam, sandy clay loam, or loam. Some pedons have a few fragments of chert, quartz, or ironstone gravel.

The C horizon has hue of 10YR to 2.5YR, value of 4 to 6, and chroma of 4 to 8. In some pedons, the colors are intermingled or the matrix has few to many mottles in shades of brown to red. The texture is loamy fine sand, sand, or fine sandy loam or is irregularly stratified with a combination of these textures. The lower part of the C horizon has varying amounts of glauconite and mica. Discontinuous thin lamellae of loamy and clayey material are in the sandy matrix of some pedons. Some pedons have fragments of chert, quartz, or ironstone gravel that make up less than 10 percent of the volume.

Providence Series

The Providence series consists of moderately well drained soils that have a fragipan. Permeability is moderate above the fragipan and moderately slow in the fragipan. These nearly level to strongly sloping soils formed in a mantle of loess about 2 feet thick and in the underlying Coastal Plain loamy sediments. They are on terraces and on ridgetops and side slopes along drainageways in the uplands. Slopes range from 0 to 12 percent. The soils of the Providence series are fine-silty, mixed, thermic Typic Fragiudalfs.

Providence soils are associated with Guyton, Savannah, Smithdale, and Tippah soils. The poorly drained Guyton soils do not have a fragipan. They have a gray matrix below the surface layer. They are in lower positions on terraces than the Providence soils. Savannah soils, which are in a fine-loamy family, are in landscape positions similar to those of the Providence soils. The well drained Smithdale soils are in a fine-loamy family. They do not have a fragipan. They are on hillsides in landscape positions below the Providence soils on ridgetops. Tippah soils do not have a fragipan. They are in landscape positions similar to those of Providence soils. They have an acid, clayey subsoil.

Typical pedon of Providence silt loam, 2 to 5 percent slopes, eroded, about 2.0 miles north of Booneville on U.S. Highway 45, 100 feet east of the highway, in a field; about 430 feet east and 1,200 feet south of the northwest corner of sec. 34, T. 4 S., R. 7 E.

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam that has a few pockets of strong brown material from the Bt horizon; weak fine granular structure; friable; many fine roots; very strongly acid; abrupt smooth boundary.

Bt—6 to 19 inches; strong brown (7.5YR 4/6) silt loam; moderate medium subangular blocky structure; friable; common fine roots; common fine and medium pores; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Btx—19 to 26 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct light yellowish brown (10YR 6/4) and light brownish gray (10YR 6/2) mottles; moderate very coarse prismatic structure parting to weak medium subangular blocky; firm, compact and brittle in more than 60 percent of the mass; few fine roots between prisms; few distinct and common faint clay films on faces of peds; very strongly acid; clear smooth boundary.

2Btx2—26 to 38 inches; mottled strong brown (7.5YR 4/6) and light brownish gray (10YR 6/2) silt loam that contains noticeable amounts of sand; moderate very coarse prismatic structure parting to weak medium subangular blocky; firm, compact and brittle; few fine roots between prisms; many fine pores; few distinct and common faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

2Bt1—38 to 50 inches; yellowish red (5YR 5/6) loam;

many medium distinct yellowish brown (10YR 5/4) mottles; weak medium subangular structure; firm; few distinct and common faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

2Bt2—50 to 60 inches; red (2.5YR 5/6) clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid.

The depth to the fragipan ranges from 18 to 30 inches. It is generally about 20 inches. Reaction is very strongly acid or strongly acid, except in the surface layer of areas that have been limed.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 3 to 6.

The E horizon, if it occurs, has hue of 10YR, value of 4 or 5, and chroma of 2 to 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. Texture is silt loam or silty clay loam. The Btx horizon and the upper part of the 2Btx horizon have a matrix with hue of 7.5YR or 10YR, value of 4 or 5, chroma of 6 to 8, and mottles in shades of gray, brown, and red; or they are mottled in shades of these colors. Texture is silty clay loam or silt loam. The 2Btx horizon has colors that are similar to those of the Btx horizon, except that hue of 5YR is also included. The texture is silt loam or silty clay loam with noticeable amounts of sand, or it is clay loam, sandy clay loam, loam, or sandy loam. The 2Bt horizon ranges in color from red to gray. It is commonly mottled. Texture commonly is loam, sandy clay loam, or clay loam. Some pedons are silt loam.

Quitman Series

The Quitman series consists of somewhat poorly drained, moderately slowly permeable soils that formed in loamy deposits. These soils are on terraces. Slopes range from 0 to 2 percent. The soils of the Quitman series are fine-loamy, siliceous, thermic Aquic Paleudults.

Quitman soils are associated with Guyton, Myatt, and Savannah soils. Guyton soils are in a fine-silty family. Guyton and Myatt soils are poorly drained. They are in lower positions on stream terraces. Savannah soils are moderately well drained, and they have a fragipan. They are in higher landscape positions on terraces or low ridgetops.

Typical pedon of Quitman fine sandy loam, 0 to 2 percent slopes, about 2⅓ miles east of Jumpertown, 60 feet north of a county road, 150 feet east of a cedar tree; about 790 feet east and 750 feet south of the northwest corner of sec. 19, T. 4 S., R. 7 E.

Ap—0 to 7 inches; brown (10YR 5/3) fine sandy loam; weak fine and medium granular structure; friable; many very fine and fine roots; few yellowish red and yellowish brown stains along old root channels; few fine pores; very slightly acid; abrupt smooth boundary.

Bt1—7 to 15 inches; yellowish brown (10YR 5/6) loam; few fine prominent light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; common fine and very fine roots; common fine pores; common faint clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—15 to 20 inches; yellowish brown (10YR 5/6) loam; common fine faint strong brown (7.5YR 5/6) and common medium prominent light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few fine roots; common faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Btx—20 to 26 inches; mottled yellowish brown (10YR 5/4), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/6) loam; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm, slightly brittle and compact in the strong brown part that makes up about 10 percent of the matrix; few fine pores; common faint clay films on faces of peds; few fine irregular manganese concretions; very strongly acid; gradual smooth boundary.

Btxg1—26 to 34 inches; grayish brown (10YR 5/2) clay loam; many medium prominent strong brown (7.5YR 5/6) mottles; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; slightly firm and brittle in the strong brown part that makes up about 15 percent of the mass; many faint clay films on faces of peds; few fine irregular black manganese concretions and manganese oxide stains; very strongly acid; gradual wavy boundary.

Btxg2—34 to 40 inches; light brownish gray (10YR 6/2) clay loam; common medium prominent dark brown (7.5YR 3/4) and strong brown (7.5YR 5/6) mottles; moderate coarse prismatic parting to moderate medium subangular blocky structure; firm, slightly brittle and compact in the brown part that makes up about 10 percent of the volume; many faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btxg3—40 to 60 inches; grayish brown (10YR 5/2) clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm, slightly brittle and compact in the brown part that makes up less than 10 percent of

the volume; few fine pores; many faint clay films on faces of peds; very strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed.

The Ap horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 4 to 8. It has few or common mottles that have chroma of 2 or less. Some pedons have few to many mottles in shades of brown. Other pedons have a thin Bt1 horizon that does not have gray mottles. Texture is fine sandy loam, loam, or sandy clay loam.

The Btx horizon has hue of 10YR or 2.5Y, value of 4 to 6, chroma of 2 to 4, and mottles in shades of gray and brown; or it is mottled in shades of brown, gray, red, and yellow. Texture is loam, sandy clay loam, clay loam, or silty clay loam. In the lower part of the horizon, about 10 to 20 percent of the mass is brittle and compact. It restricts roots in the strong brown part. The horizon generally has few or common brown, black, or red concretions.

Rosebloom Series

The Rosebloom series consists of poorly drained, moderately permeable soils. They are in broad flats and in sloughs on flood plains. These soils formed in silty alluvium that washed from the loess-covered uplands. Slopes range from 0 to 2 percent. The soils of the Rosebloom series are fine-silty, mixed, acid thermic Typic Fluvaquents.

Rosebloom soils are associated with Arkabutla, Bibb, Chenneby, Houlka, and Mantachie soils on flood plains. Bibb soils are in a coarse-loamy family. They are in sloughs and broad depressions on flood plains, in landscape positions similar to those of the Rosebloom soils. Arkabutla and Chenneby soils are somewhat poorly drained. They are in slightly higher landscape positions. Houlka soils, which are in a fine family, are mainly in depressions. Mantachie soils, which are in a fine-loamy family, are somewhat poorly drained. They are near stream channels or overflow stream channels.

Typical pedon of Rosebloom silt loam, frequently flooded, about ⅓ mile east of Booneville, about 100 yards north of the Highway 4 bypass; about 740 feet north and 2,280 feet west of the southeast corner of sec. 3, T. 5 S., R. 7 E.

Ap—0 to 9 inches; brown (10YR 5/3) silt loam; many medium distinct dark brown (10YR 4/3) mottles; weak fine and moderate medium granular structure; friable; many fine roots; moderately acid; abrupt smooth boundary.

Bg1—9 to 32 inches; gray (10YR 6/1) silt loam; common fine and medium distinct light yellowish brown (10YR 6/4) and few fine prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; many fine roots; few medium irregular black and brown manganese concretions; very strongly acid; clear smooth boundary.

Bg2—32 to 40 inches; light brownish gray (10YR 6/2) silty clay loam; common fine and medium distinct light yellowish brown (10YR 6/4) and few fine prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; firm, sticky and plastic; common fine roots; few medium irregular black and brown manganese concretions; very strongly acid; clear smooth boundary.

Bg3—40 to 50 inches; light brownish gray (10YR 6/2) silty clay loam; many medium distinct light yellowish brown (2.5Y 6/4) and few fine prominent strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; firm, sticky and plastic; few fine roots; few medium irregular black and brown manganese concretions; very strongly acid; gradual wavy boundary.

Cg—50 to 60 inches; light gray (10YR 6/1) silty clay loam; many coarse distinct light yellowish brown (2.5Y 6/4) and many medium prominent strong brown (7.5YR 5/6) mottles; massive; firm, sticky and plastic; many medium irregular black and brown manganese concretions; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed.

The A or Ap horizon has hue of 10YR, value of 4 to 6, chroma of 1 to 3, and few to many mottles in shades of brown and gray; or it is mottled in shades of brown or brown and gray.

The Bg horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. It has mottles in shades of brown or yellow. The texture is silt loam or silty clay loam. The horizon generally has few to many brown and black concretions.

The Cg horizon, if it occurs, has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. It commonly has few to many mottles in shades of yellow, brown, or red.

Ruston Series

The Ruston series consists of well drained, moderately permeable soils that formed in loamy Coastal Plain sediments. These soils are on ridgetops

in dissected uplands. Slopes range from 2 to 8 percent. The soils of the Ruston series are fine-loamy, siliceous, thermic Typic Paleudults.

Ruston soils are associated with Luverne, Okeelala, Savannah, and Smithdale soils in the uplands. Luverne soils, which are in a clayey family, have a thinner solum and do not have a bisequum. They are on the lower slopes. The moderately well drained Savannah soils, which are mainly on wider ridgetops, have a fragipan. Okeelala and Smithdale soils are on steeper hillsides in lower positions on the landscape. They do not have a bisequum. Okeelala soils have medium base saturation below the solum.

Typical pedon of Ruston fine sandy loam, in an area of Okeelala, Ruston, and Luverne fine sandy loams, 3 to 8 percent slopes, severely eroded, in a old field about 3.5 miles east of Wheeler and 120 feet west of a county road; about 210 feet east and 1,720 feet south of the northwest corner of sec. 2, T. 6 S., R. 7 E.

Ap—0 to 3 inches; brown (10YR 5/3) fine sandy loam that is mixed with some yellowish red (5YR 5/6) clay loam from the Bt1 horizon; weak fine granular structure; friable; many fine roots; medium acid; abrupt smooth boundary.

Bt1—3 to 11 inches; yellowish red (5YR 5/6) clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; common medium roots; strongly acid; clear wavy boundary.

Bt2—11 to 26 inches; red (2.5YR 5/6) sandy clay loam; few medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; common fine and medium roots; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

B/E—26 to 44 inches; red (2.5YR 5/6) fine sandy loam in the Bt part; pockets of light yellowish brown (10YR 6/4) loamy sand (E material) make up about 20 percent of volume; moderate medium subangular blocky structure; firm; few fine and medium roots; few distinct clay films on faces of peds in the Bt part; very strongly acid; clear wavy boundary.

B't1—44 to 54 inches; red (2.5YR 5/6) sandy clay loam; common medium prominent yellowish brown (10YR 5/6) and pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

B't2—54 to 60 inches; red (2.5YR 5/6) sandy clay loam; common medium prominent yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; very strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed.

The A or Ap horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4.

The E horizon, if it occurs, and the E part of the B/E horizon have hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Texture is loamy sand, fine sandy loam, or sandy loam.

The Bt and B't horizons and the B part of the B/E horizon have hue of 5YR or 2.5YR, value of 4 to 6, and chroma of 4 to 8. Texture is sandy clay loam, fine sandy loam, sandy loam, loam, or clay loam. In some pedons, the B't horizon is mottled in shades of gray, brown, red, or yellow. The content of clay decreases from the Bt horizon to the B/E horizon and increases in the B't horizon. Streaks and pockets of E material make up as much as 50 percent of the B/E horizon.

Savannah Series

The Savannah series consists of moderately well drained, moderately slowly permeable soils that have a fragipan. These soils formed in loamy Coastal Plain deposits. They are on terraces and uplands. Slopes range from 0 to 12 percent. The soils of the Savannah series are fine-loamy, siliceous, thermic Typic Fragiudults.

Savannah soils are associated with Guyton, Myatt, Providence, Quitman, Ruston, and Smithdale soils. The poorly drained Guyton and Myatt soils do not have a fragipan. They are in lower positions on broad terraces. Guyton soils are in a fine-silty family. Providence soils, which are in a fine-silty family, are in landscape positions similar to those of the Savannah soils. The somewhat poorly drained Quitman soils do not have a fragipan. They are in slightly lower positions on terraces. The well drained Ruston, Okeelala, and Smithdale soils do not have a fragipan. Ruston soils are on ridgetops. They have a bisequum. Okeelala and Smithdale soils are on steep hillsides. Okeelala soils have a moderate base saturation below the solum.

Typical pedon of Savannah fine sandy loam, 2 to 5 percent slopes, eroded, about 3½ miles south of Altitude, 200 feet west of a county road; about 1,730 feet west and 1,590 feet north of the southeast corner of sec. 27, T. 5 S., R. 8 E.

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; friable; many fine roots; very strongly acid; abrupt smooth boundary.

Bt1—6 to 14 inches; yellowish brown (10YR 5/6) loam;

moderate medium subangular structure; friable; many fine roots; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—14 to 22 inches; yellowish brown (10YR 5/4) sandy clay loam; common medium faint yellowish brown (10YR 5/6) and few medium distinct pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; friable; common fine roots; common distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Btx1—22 to 38 inches; yellowish brown (10YR 5/6) sandy loam; many medium distinct light brownish gray (10YR 6/2) and common medium distinct dark yellowish brown (10YR 4/6) mottles; weak very coarse prismatic structure parting to weak fine subangular blocky; very firm, compact and brittle in about 60 percent of the volume; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btx2—38 to 54 inches; yellowish brown (10YR 5/4 and 5/6) sandy loam; common medium distinct light brownish gray (10YR 6/2) mottles; weak very coarse prismatic structure parting to moderate medium subangular blocky; very firm, compact and brittle in about 70 percent of the mass; few distinct clay films on faces of peds; common fine pores; extremely acid; gradual wavy boundary.

Btx3—54 to 60 inches; yellowish brown (10YR 5/4) sandy loam; many medium distinct light brownish gray (10YR 6/2) and brown (7.5YR 5/4) mottles; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm, compact and brittle in about 60 percent of mass; few distinct clay films on faces of peds; few fine pores; extremely acid.

The thickness of the solum ranges from 50 to more than 80 inches. The depth to the fragipan ranges from 16 to 30 inches. Reaction is extremely acid to strongly acid throughout the profile, except in the surface layer of areas that have been limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. The E horizon, if it occurs, has hue of 10YR, value of 6, and chroma of 3.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. Some pedons have few or common mottles in shades of brown. The horizon is sandy clay loam, clay loam, or loam.

The Btx horizon has hue of 10YR, value of 4 or 5, chroma of 4 to 8, and mottles in shades of gray and brown; or it is mottled in shades of yellow, brown, red, and gray. Texture is sandy clay loam, clay loam, loam, or sandy loam.

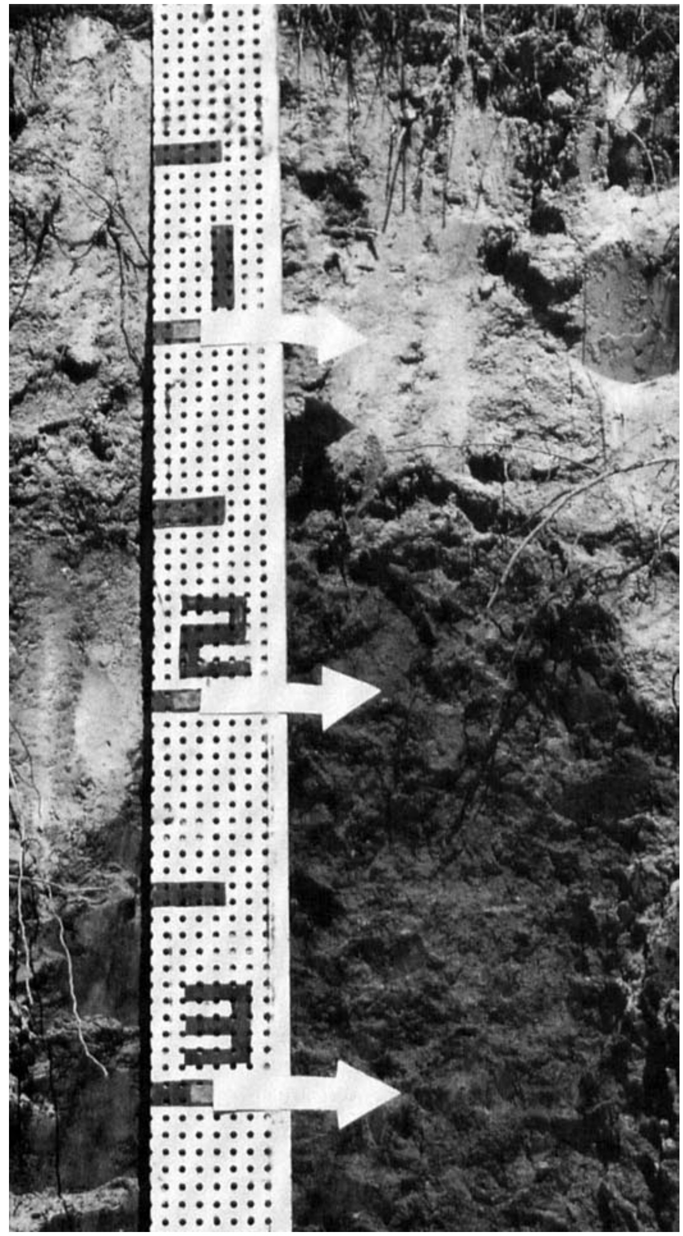

Figure 29.—A profile of the Smithdale soil in an area of Okeelala, Luverne, and Smithdale soils, 5 to 45 percent slopes.

Smithdale Series

The Smithdale series consists of well drained, moderately permeable soils that formed in loamy Coastal Plain sediments on hillsides in hilly areas in the uplands (fig. 29). Slopes range from 8 to 45 percent. The soils of the Smithdale series are fine-loamy, siliceous, thermic Typic Hapludults.

Smithdale soils are associated with Luverne, Okeelala, Providence, Ruston, and Savannah soils in the uplands. Luverne soils, which are in a clayey family, have a thinner solum. Okeelala soils have a thinner solum and moderate base saturation below the solum; Luverne and Okeelala soils are on hillsides in landscape positions similar to those of the Smithdale soils. The moderately well drained Providence soils, which are in a fine-silty family, are on ridgetops. They have a fragipan. Ruston soils are on higher parts of the landscape, mainly on the ridgetops. They have a bisequum. The moderately well drained Savannah soils, which are also on ridgetops, have a fragipan.

Typical pedon of Smithdale fine sandy loam, in an area of Okeelala, Luverne, and Smithdale soils, 5 to 45 percent slopes, about 0.1 mile east of Highway 4 and about 50 feet north of a logging road; about 740 feet east and 380 feet south of the northwest corner of sec. 8, T. 6 S., R. 8 E.

A—0 to 3 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; many fine and very fine roots; very strongly acid; clear smooth boundary.

E—3 to 14 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; very friable; many fine and very fine roots; very strongly acid; clear smooth boundary.

Bt1—14 to 26 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine and very fine roots; common distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—26 to 36 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt3—36 to 48 inches; yellowish red (5YR 5/6) sandy loam; common medium distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; common faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt4—48 to 60 inches; yellowish red (5YR 5/6) sandy loam; many medium distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; few pockets of pale brown (10YR 6/3) sand grains; very strongly acid; gradual wavy boundary.

Bt5—60 to 65 inches; yellowish red (5YR 5/8) sandy loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid.

The thickness of the solum ranges from 60 inches to more than 100 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in the surface layer of areas that have been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 to 3. The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 6.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. It is fine sandy loam, sandy loam, loamy fine sand, or loamy sand.

The upper part of the Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. Some pedons have few to many mottles in shades of red and brown. Texture is clay loam, sandy clay loam, or loam. The lower part has colors similar to those of the upper part. It commonly has few to many pockets of pale brown to brownish yellow sand grains. Texture is loam or sandy loam. Some pedons have ironstone gravel or discontinuous plates of ironstone that make up as much as 10 percent of the volume.

Sumter Series

The Sumter series consists of well drained, slowly permeable soils that formed in marly clay and the underlying weathered chalk. The depth to marly clay or weathered chalk ranges from 20 to 40 inches (fig. 30). These soils are on hillsides in rolling to hilly areas in the uplands of the Blackland Prairie. Slopes range from 8 to 40 percent. The soils of the Sumter series are fine-silty, carbonatic, thermic Rendollic Eutrochrepts.

Sumter soils are associated with Kipling soils in the uplands. The somewhat poorly drained Kipling soils are mainly in higher landscape positions on smoother, broader slopes. They have an acid Bt horizon.

Typical pedon of Sumter silty clay, 8 to 12 percent slopes, severely eroded, 0.8 mile east of Jumpertown on State Highway 4, about 1.1 miles south on a county road, 0.8 mile north on a gravel driveway, 50 feet southwest in a pasture; about 1,990 feet south and 910 feet east of the northwest corner of sec. 34, T. 4 S., R. 6 E.

Ap—0 to 2 inches; grayish brown (2.5Y 5/2) silty clay; moderate fine granular structure; friable; about 15 to 25 percent light brownish gray (2.5Y 6/2) subsoil material; sticky and plastic; many fine roots; few fine irregular calcium carbonate nodules; common wormcasts; strongly effervescent; moderately alkaline; abrupt smooth boundary.

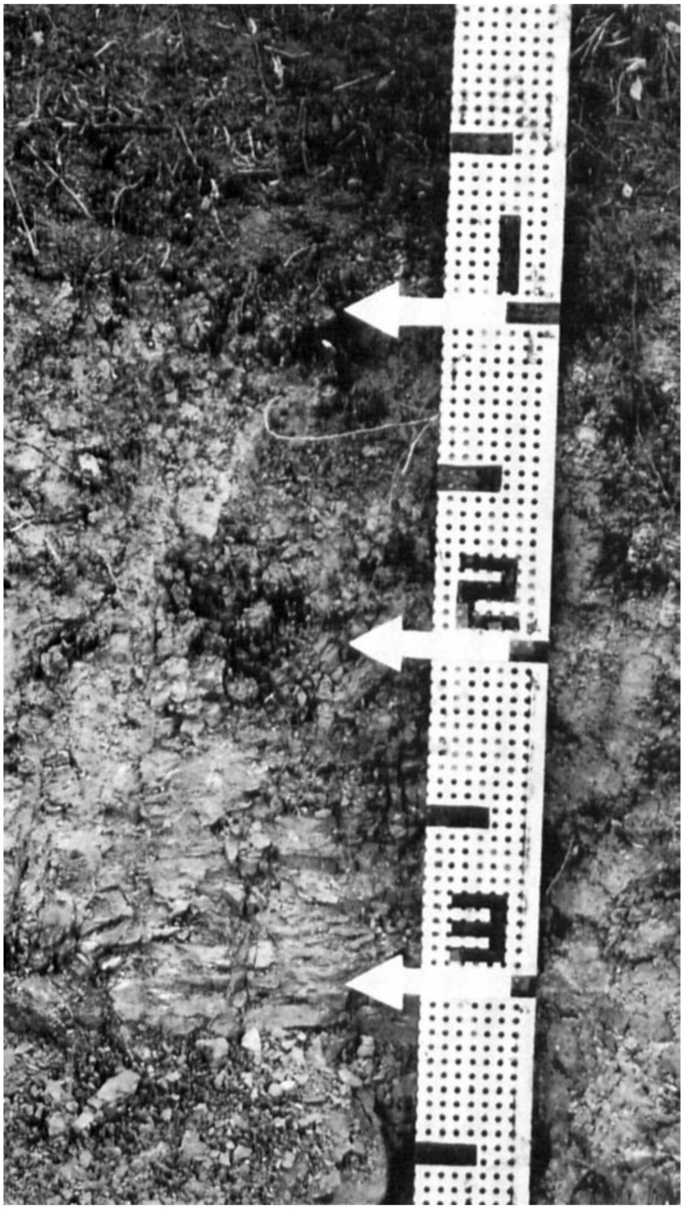

Figure 30.—Platy layers of chalk underlying a profile of Sumter silty clay, 8 to 12 percent slopes, severely eroded.

Bw—2 to 22 inches; yellowish brown (10YR 5/6) clay; moderate fine subangular and angular blocky structure; firm, sticky and plastic; common fine roots; common medium distinct stains of light yellowish brown (2.5Y 6/4) on faces of peds; few wormcasts; common medium cylindrical calcium carbonate concretions; strongly effervescent; moderately alkaline; gradual wavy boundary.

BC—22 to 37 inches; light olive brown (2.5Y 5/4) clay; many medium distinct yellowish brown (10YR 5/6) mottles; moderate fine subangular blocky structure; firm, sticky and plastic; common fine roots; many medium cylindrical calcium carbonate concretions; few fine soft lime accumulations; few weathered fragments of chalk; moderately alkaline; violently effervescent; gradual wavy boundary.

Cr—37 to 48 inches; light brownish gray (2.5Y 6/2) chalk; streaks of yellowish brown (10YR 5/6) along cracks and in cracks; moderately alkaline; violently effervescent.

The thickness of the solum over marly clay or chalk ranges from 20 to 40 inches. Reaction in the A horizon is neutral to moderately alkaline. Reaction in the Bw horizon is mildly alkaline or moderately alkaline.

The A horizon has hue of 10YR to 5Y, value of 2 to 5, and chroma of 1 or 2.

The Bw horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 7, and chroma of 3 to 6. Most pedons have few or common mottles in shades of brown or yellow. The horizon has few to many soft masses of lime accumulations and calcium carbonate concretions. Texture is silty clay loam, silty clay, or clay.

The Cr horizon has hue of 2.5Y or 5Y, value of 6 or 7, and chroma of 1 to 3. It has mottles in shades of yellow and brown along cracks and seams. It is firm chalk that can be cut with some difficulty using a spade.

Tippah Series

The Tippah series consists of moderately well drained, slowly permeable soils that formed in a thin layer of loess, about 2 to 3 feet thick, and the underlying acid clayey sediments. These soils are on ridgetops and broader slopes in undulating to rolling areas in the uplands. Slopes range from 5 to 12 percent. The soils of the Tippah series are fine-silty, mixed, thermic Aquic Paleudalfs.

Tippah soils are associated with Luverne and Providence soils in the uplands. Providence soils have a fragipan. They are in landscape positions similar to those of the Tippah soils. The well drained Luverne soils, which are in a clayey family, do not have a high content of silt in the solum. They are on lower hillsides, in landscape positions below the Tippah soils.

Typical pedon of Tippah silt loam, 8 to 12 percent slopes, severely eroded, 3.2 miles northwest of Booneville on State Highway 4, about 0.25 mile northwest on a paved road, 200 feet northwest in a pasture; about 1,610 feet east and 2,380 feet north of the southwest corner of sec. 31, T. 4 S., R. 7 E.

Ap—0 to 3 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many pockets

of yellowish brown (10YR 5/6) soil material; many fine and medium roots; slightly acid; abrupt smooth boundary.

Bt1—3 to 10 inches; strong brown (7.5YR 5/6) silty clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; common distinct clay films on faces of peds; few medium black concretions; moderately acid; clear smooth boundary.

Bt2—10 to 20 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; common distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt3—20 to 30 inches; strong brown (7.5YR 5/6) silty clay loam; common medium faint yellowish red (5YR 4/6) and common medium prominent light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few medium roots; common distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

2Bt4—30 to 50 inches; brownish yellow (10YR 6/6) clay; many medium prominent red (2.5YR 4/8) and gray (10YR 6/1) mottles; moderate medium angular blocky structure; firm, sticky and plastic; few fine roots; many distinct and common prominent clay films on faces of peds; very strongly acid; gradual smooth boundary.

2Bt5—50 to 60 inches; brownish yellow (10YR 6/6) clay; common medium prominent yellowish red (5YR 4/6) and many medium prominent gray (10YR 6/1) mottles; moderate medium angular blocky structure; firm, sticky and plastic; many distinct and common prominent clay films on faces of peds; few medium roots; moderately acid.

The solum is more than 60 inches thick. Reaction is very strongly acid to moderately acid throughout, except in the surface layer of areas that have been limed.

The Ap horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 6.

The Bt horizon has hue of 7.5YR, value of 5, and chroma of 6 to 8 or has hue of 5YR, value of 4 or 5, and chroma of 4 to 6. The lower part of the Bt horizon has few to many mottles in shades of brown, gray, or yellow. Mottles that have chroma of 2 or less are within a depth of 30 inches. Texture is silt loam or silty clay loam.

The 2Bt horizon has a matrix that ranges from red to gray and has few to many mottles in shades of yellow, brown, red, or gray; or it is mottled in shades of red, gray, brown, and yellow. It is silty clay loam, clay loam, silty clay, or clay.

Formation of the Soils

In this section, the factors of soil formation are discussed and related to the soils of Prentiss County. In addition, the processes of soil formation are described.

Factors of Soil Formation

This section discusses the major factors and processes that have affected the formation and morphology of the soils in Prentiss County. Soil, as used in this discussion, is a natural, three-dimensional body at the Earth's surface. It is capable of supporting plants and has properties that result from the integrated effect of climate and living matter acting on earthy parent material, conditioned by relief over a long period of time.

Soils are formed through the interaction of five major factors—climate, plant and animal life, parent material, relief, and time. The relative influence of each factor varies from place to place, and in some places one factor dominates in the formation of a soil and determines most of its properties. Local variations in the soils in Prentiss County is caused mainly by differences in parent material, relief, time, and the effects of man.

Climate

The climate of Prentiss County is of the humid, warm-temperate, and continental type. Winters are mild and generally have short periods of freezing weather. Summers are fairly hot, and occasionally the temperature is more than 100 degrees F.

These climatic features favor rapid chemical reactions. When rainfall is heavy during late winter and early spring, the soils are leached of soluble materials. Small amounts of organic matter accumulate in the soils. The climate is fairly uniform throughout the county, and it is not a major factor in producing differences in the soils. The average temperature and precipitation for Prentiss County are indicated in table 1.

Plants and Animals

Plants, animals, earthworms, and other organisms have an important effect on the formation of soils. Bacteria, fungi, and other microorganisms aid in decomposing organic matter and in weathering rock. Earthworms mix the surface layer of the soil.

The types and numbers of plants and animals that live on and in the soil are determined by climate, parent material, relief, and age of the soil.

Vegetation, including hardwood and pine trees, have significantly affected soil formation in Prentiss County. The native vegetation in the uplands was mainly hickory, red maple, red oak, cherrybark red oak, white oak, chinkapin oak, and shortleaf pine. On well drained soils in the bottom land, the native vegetation was ash, basswood, cherrybark oak, cow oak, willow oak, beech, and other lowland hardwoods. On poorly drained soils in the bottom land, the native vegetation was cypress, tupelo gum, bitter pecan, and overcup oak. On the excessively to moderately well drained soils along the major streams, the native vegetation was cottonwood, swamp white oak, cherrybark oak, and sweetgum.

In some areas, humans have greatly altered the surface layer of soils and changed the soil environment by clearing forests, cultivating the soils, and introducing new plants. Fertilizer, lime, and various chemicals for insect, disease, and weed control have been added to the soils. The construction of levees and dams for flood control, improvements to the drainage system, and the implementation of conservation practices also have affected soil development.

Parent material

Parent material is the unconsolidated mass from which a soil develops. The parent material of the soils in Prentiss County consists of thin layers of loess and the underlying Coastal Plain deposits and alluvium.

Loess consists of silt-sized particles that were deposited by wind. It was carried southward and deposited on flood plains of the Mississippi River from melting glaciers, and it was later deposited by wind on the older formations. The upper soil horizons formed from thin layers of loess, less than 4 feet thick, and the lower soil horizons formed in acid Coastal Plain deposits. Providence and Tippah soils formed out of this combination of parent material. Soils that formed in

Figure 31.—An area of Smithdale, Luverne, and Ruston fine sandy loams, 2 to 45 percent slopes, near Lebanon Mountain. Many areas in Prentiss County are very hilly.

loess are mainly in the northern and northwestern parts of the county.

Some soils in Prentiss County formed in more than one kind of parent material.

Two soils in the western part of the county formed in weathered loess underlain by calcareous, clayey, Coastal Plain deposits over chalk. Dulac soils formed in this kind of parent material.

Two soils, which are also in the western part of the county, formed in calcareous Coastal Plain deposits and weathered calcareous and acid clayey deposits overlying chalk. Kipling and Sumter soils formed in this kind of parent material.

The soils along streams in the western part of the county formed in nonacid alluvium that washed from the surrounding uplands and was deposited on the flood plains by streams. Catalpa, Leeper, and Marietta soils formed in this kind of parent material.

The parent material in steeper areas in the extreme western and southern parts and all of the eastern parts of Prentiss County are Coastal Plain deposits. These sediments are mixtures of sand, silt, and clay that contain more sand than the sediments of soils that formed in loess. Luverne, Okeelala, Ruston, and Smithdale soils formed in this kind of parent material.

The soils along streams in the extreme western and

southern parts and all of the eastern parts of the county formed in acid alluvium that washed from the surrounding uplands and was deposited on the flood plains by streams. Arkabutla, Bibb, Chenneby, Houlka, Iuka, Kinston, Kirkville, Mantachie, and Rosebloom soils formed in this kind of parent material.

Relief

Relief, or topography, affects the rate of runoff, the moisture content, and erosion. The rate of runoff is higher on steep slopes than on gentle slopes. Excess moisture is present in soils that develop in low areas. The wetness results in gray or mottled colors in the subsoil. Bibb, Guyton, Kinston, Myatt, and Rosebloom are examples of soils that were influenced by wetness. Soils that formed on well drained sites include Okeelala, Ruston, and Smithdale soils. These soils have a reddish subsoil.

The topography of the extreme western part and the southern and eastern parts of Prentiss County is gently sloping to very steep. Slopes range from 0 to 45 percent. The landscape is deeply dissected by steep side slopes and narrow valleys. In the northwestern corner of the county, the landscape consists of gently undulating to rolling hills. From the western part of the county to just west of Booneville, most areas range from undulating to hilly. The eastern part of the county is mainly steep and hilly and has narrow ridgetops and valleys. Some of the highest areas are in the extreme western part in the county. The highest elevation is 792 feet above sea level at Lebanon Mountain (fig. 31). The lowest elevation is about 330 feet, near the Twenty Mile Creek that flows into Lee County.

Time

A long period of time is required for most soils to form. The weathering of soil materials precedes the development of soil horizons. The age of a soil is reflected in the degree of development of the soil profile.

The alluvial soils along flood plains of streams are the youngest soils in the county because soil material continually is being deposited. Examples of alluvial soils include Bibb, Iuka, and Kinston soils on flood plains. These soils do not have distinct horizons in the soil profile. Okeelala, Providence, Ruston, Savannah, and Smithdale soils are older, loamy soils that formed in the uplands. These soils have distinct horizons in the profile.

Processes of Horizon Differentiation

Several processes were involved in the formation of soil horizons in the soils of Prentiss County. These processes include the accumulation of organic matter, the leaching of calcium carbonates and bases, the reduction and transfer of iron, and the formation and translocation of silicate clay minerals. In most of the soils, more than one of these processes have been active in the development of horizons.

Accumulation of organic matter in the upper profile to form an A horizon has been an important process. The soils in the county have a low content of organic matter.

The leaching of carbonates and bases has occurred in nearly all of the soils. Soil scientists generally agree that leaching of bases in soils normally precedes translocation of silicate clay minerals. Most of the soils in the county are moderately to strongly leached.

The reduction and transfer of iron, a process called gleying, is evident in the poorly drained and very poorly drained soils in the county. The gray color in the subsoil indicates the reduction and loss of iron. Some horizons contain reddish-brown mottles and concretions that indicate the segregation of iron.

In some soils, the translocation of clay minerals has contributed to the development of soil horizons. The eluviated E horizon, which is above the B horizon, has less clay and is generally lighter in color. The B horizon generally has an accumulation of clay or clay films in pores and on ped surfaces. The soils were probably leached of carbonates and soluble salts to a considerable extent before the translocation of silicate clays occurred. The leaching of bases and the translocation of silicate clays are important processes in horizon differentiation in the soils of Prentiss County. Examples of soils that have an accumulation of translocated silicate clays in the B horizon, in the form of clay films, include Luverne, Providence, and Ruston soils.

References

(1) American Association of State Highway and Transportation Officials. 1986. Standard specifications for highway materials and methods of sampling and testing. Ed. 14, 2 vol.

(2) American Society for Testing and Materials. 1993. Standard classification of soils for engineering purposes. ASTM Stand. D 2487.

(3) Cross, Ralph D. and others. 1974. Atlas of Mississippi.

(4) Day, Paul R. and others. 1956. Report of the committee on physical analysis, 1954-1955. Soil Sci. Soc. Am. Proc. 20.

(5) Goodman, K.V. and A.H. Hasty. 1957. Soil survey of Prentiss County, Mississippi. Soil Conserv. Serv., U.S. Dep. Agric. Series 1942, No. 16.

(6) Hilgard, Eng. W. 1860. Geology and agriculture of Mississippi.

(7) Parks, William Scott, B.E. Ellison, and E.H. Boswell. 1960. Prentiss County geology and groundwater resources. Mississippi St. Geol. Surv., Bull. 87.

(8) United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv., U.S. Dep. Agric. Handb. 436.

(9) United States Department of Agriculture. 1978. A symposium on principles of maintaining productivity on prepared sites. Forest Serv. Res. Bull. SE S&PF.

(10) United States Department of Agriculture. 1978. Forest statistics for Mississippi Counties. Forest Serv. Res. Bull. SO-69.

(11) United States Department of Agriculture. 1978. Mississippi forests—trends and outlook. Forest Serv. Res. Bull. SO-67.

(12) United States Department of Agriculture. 1983. Silvicultural systems for the major forest types of the United States. Forest Serv. Agric. Handbook No. 445.

(13) United States Department of Agriculture. 1985. Midcycle survey of Mississippi's forest resources. Forest Serv. Res. Bull. SO-101.

(14) United States Department of Agriculture. 1988 (rev.). Procedures for collecting soil samples and methods of analysis for soil survey. Soil Surv. Invest. Rep. 1.

(15) United States Department of Agriculture. 1993. Soil survey manual. U.S. Dep. Agric. Handb. 18

(16) United States Department of Commerce, Bureau of Census. 1982. Census of agriculture, preliminary report.

(17) United States Geological Survey and the Mississippi Research and Development Center. 1975. Water for industrial development in Alcorn, Itawampa, Prentiss, and Tishomingo Counties, Mississippi.

Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chalk. Soft, earthy, fine textured, usually white to light gray limestone that is of marine origin.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Complex slope. Irregular or variable slope. Planning or

establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic)—Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated)—Erosion much more rapid than geologic erosion, mainly as a result of the human or animal activities or of a catastrophe in nature, such as fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Fast intake (in tables). The movement of water into the soil is rapid.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.
A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.
E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.
B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.
C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.
Cr horizon.—Soft, consolidated bedrock beneath the soil.
R layer.—Consolidated rock (unweathered bedrock) beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material. This contrasts with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:
Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.
Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.
Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.
Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.
Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or

into the soil through such applicators as emitters, porous tubing, or perforated pipe.
Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.
Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.
Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.
Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water to move through the profile. Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Subsurface tunnels or pipelike cavities are formed by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of

moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of the acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Seepage (in tables). The movement of water through the soil adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slow intake (in tables). The slow movement of water into the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters

in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff, so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Unstable fill (in tables). There is a risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

Weathering. All physical and chemical changes produced by atmospheric agents in rocks or other deposits at or near the earth's surface. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-90 at Booneville, Mississippi)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	48.2	28.4	38.3	73	3	25	5.25	2.33	7.75	7	1.7
February----	53.3	32.0	42.6	77	8	48	4.91	2.84	6.76	7	0.9
March-------	62.3	40.1	51.2	82	20	144	5.94	3.24	8.33	8	0.2
April-------	72.3	49.0	60.6	87	30	333	5.47	2.89	7.73	6	0.0
May---------	79.9	57.5	68.7	92	40	577	5.19	2.81	7.28	7	0.0
June--------	87.1	65.3	76.2	98	50	786	3.66	1.37	5.58	5	0.0
July--------	90.4	69.0	79.7	100	57	909	4.04	2.17	5.68	6	0.0
August------	90.1	67.7	78.9	101	55	885	2.81	1.25	4.13	5	0.0
September---	84.5	61.0	72.8	98	43	678	3.46	1.38	5.22	5	0.0
October-----	73.8	48.4	61.1	91	30	354	3.20	1.62	4.73	4	0.0
November----	62.0	39.4	50.7	81	18	132	5.13	2.63	7.31	6	0.0
December----	52.3	32.0	42.2	74	9	41	5.78	2.70	8.44	7	0.7
Yearly:											
Average---	71.4	49.2	60.3	---	---	---	---	---	---	---	---
Extreme---	108	-8	---	102	0	---	---	---	---	---	---
Total-----	---	---	---	---	---	4,912	54.84	43.56	62.29	73	3.6

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-90 at Booneville, Mississippi)

Probability	Temperature: 24 °F or lower	Temperature: 28 °F or lower	Temperature: 32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Mar. 21	Mar. 30	Apr. 15
2 years in 10 later than--	Mar. 12	Mar. 24	Apr. 10
5 years in 10 later than--	Feb. 25	Mar. 14	Apr. 1
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 6	Oct. 28	Oct. 19
2 years in 10 earlier than--	Nov. 12	Nov. 2	Oct. 23
5 years in 10 earlier than--	Nov. 23	Nov. 12	Nov. 2

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-90 at Booneville, Mississippi)

Probability	Daily minimum temperature during growing season: Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	237	220	194
8 years in 10	249	228	202
5 years in 10	272	243	216
2 years in 10	295	258	230
1 year in 10	307	266	238

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Ar	Arkabutla silt loam, occasionally flooded	86	*
Bb	Bibb sandy loam, frequently flooded	6,724	2.5
BI	Bibb and Iuka sandy loams, frequently flooded	2,601	1.0
Ca	Catalpa silty clay, occasionally flooded	2,057	0.8
Ch	Chenneby silt loam, occasionally flooded	4,259	1.6
DuB2	Dulac silt loam, 2 to 5 percent slopes, eroded	1,760	0.7
Gu	Guyton silt loam	1,347	0.5
Ho	Houlka clay loam, occasionally flooded	1,891	0.7
Iu	Iuka fine sandy loam, occasionally flooded	9,147	3.4
Kn	Kinston loam, frequently flooded	1,274	0.5
KpB2	Kipling silt loam, 2 to 5 percent slopes, eroded	3,329	1.2
KrC3	Kipling silty clay loam, 5 to 8 percent slopes, severely eroded	6,909	2.6
KrD3	Kipling silty clay loam, 8 to 12 percent slopes, severely eroded	4,209	1.6
KrF3	Kipling silty clay loam, 12 to 40 percent slopes, severely eroded	2,318	0.9
Kv	Kirkville fine sandy loam, occasionally flooded	2,103	0.8
Le	Leeper silty clay, occasionally flooded	5,967	2.2
LuC3	Luverne fine sandy loam, 5 to 8 percent slopes, severely eroded	5,102	1.9
LuD3	Luverne fine sandy loam, 8 to 12 percent slopes, severely eroded	3,700	1.4
LV	Luverne and Smithdale sandy loams, 5 to 45 percent slopes	3,594	1.3
Ma	Mantachie fine sandy loam, occasionally flooded	15,916	5.9
Mr	Marietta fine sandy loam, occasionally flooded	5,738	2.1
My	Myatt silt loam, frequently flooded	939	0.4
OkD3	Okeelala fine sandy loam, 8 to 12 percent slopes, severely eroded	4,034	1.5
OLS	Okeelala, Luverne, and Smithdale soils, 5 to 45 percent slopes	54,565	20.4
ORL	Okeelala, Ruston, and Luverne fine sandy loams, 3 to 8 percent slopes, severely eroded	2,516	0.9
Pa	Pits-Udorthents complex	139	0.1
PdA	Providence silt loam, 0 to 2 percent slopes	900	0.3
PdB2	Providence silt loam, 2 to 5 percent slopes, eroded	4,172	1.6
PdC3	Providence silt loam, 5 to 8 percent slopes, severely eroded	4,446	1.7
PdD3	Providence silt loam, 8 to 12 percent slopes, severely eroded	1,191	0.4
QuA	Quitman fine sandy loam, 0 to 2 percent slopes	3,108	1.2
Ro	Rosebloom silt loam, frequently flooded	362	0.1
RuB2	Ruston fine sandy loam, 2 to 5 percent slopes, eroded	688	0.3
RuC3	Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded	11,392	4.3
SaA	Savannah fine sandy loam, 0 to 2 percent slopes	2,191	0.8
SaB2	Savannah fine sandy loam, 2 to 5 percent slopes, eroded	13,912	5.2
SaC3	Savannah fine sandy loam, 5 to 8 percent slopes, severely eroded	6,465	2.4
SaD3	Savannah fine sandy loam, 8 to 12 percent slopes, severely eroded	808	0.3
SmD3	Smithdale fine sandy loam, 8 to 12 percent slopes, severely eroded	4,093	1.5
SNR	Smithdale, Luverne, and Ruston fine sandy loams, 2 to 45 percent slopes	47,211	17.6
SuD3	Sumter silty clay, 8 to 12 percent slopes, severely eroded	3,986	1.5
SuF3	Sumter silty clay, 12 to 40 percent slopes, severely eroded	3,374	1.3
TpC2	Tippah silt loam, 5 to 8 percent slopes, eroded	860	0.3
TpC3	Tippah silt loam, 5 to 8 percent slopes, severely eroded	1,414	0.5
TpD3	Tippah silt loam, 8 to 12 percent slopes, severely eroded	1,170	0.4
Ur	Urban land	671	0.3
	Water	1,695	0.6
	Total	267,603	100.0

* Less than 0.1 percent.

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
Ar	Arkabutla silt loam, occasionally flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
Ca	Catalpa silty clay, occasionally flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
Ch	Chenneby silt loam, occasionally flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
DuB2	Dulac silt loam, 2 to 5 percent slopes, eroded
Ho	Houlka clay loam, occasionally flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
Iu	Iuka fine sandy loam, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
KpB2	Kipling silt loam, 2 to 5 percent slopes, eroded
Kv	Kirkville fine sandy loam, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
Le	Leeper silty clay, occasionally flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
Ma	Mantachie fine sandy loam, occasionally flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
Mr	Marietta fine sandy loam, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
PdA	Providence silt loam, 0 to 2 percent slopes
PdB2	Providence silt loam, 2 to 5 percent slopes, eroded
QuA	Quitman fine sandy loam, 0 to 2 percent slopes
RuB2	Ruston fine sandy loam, 2 to 5 percent slopes, eroded
SaA	Savannah fine sandy loam, 0 to 2 percent slopes
SaB2	Savannah fine sandy loam, 2 to 5 percent slopes, eroded

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Wheat	Tall fescue	Improved bermuda-grass	Bahiagrass
		Lbs	Bu	Bu	Bu	AUM*	AUM*	AUM*
Ar------------- Arkabutla	IIw	700	95	35	---	10.0	11.0	10.0
Bb------------- Bibb	Vw	---	---	---	---	8.0	---	---
BI-------------		---	---	---	---	7.7	---	---
Bibb	Vw							
Iuka	Vw							
Ca------------- Catalpa	IIw	750	80	40	40	11.0	12.0	9.0
Ch------------- Chenneby	IIw	700	100	35	---	10.0	10.0	10.0
DuB2----------- Dulac	IIe	600	75	35	40	8.5	9.5	8.5
Gu------------- Guyton	IIIw	---	---	23	30	---	---	6.5
Ho------------- Houlka	IIw	725	80	40	40	10.0	12.0	9.0
Iu------------- Iuka	IIw	750	110	40	---	8.0	9.0	8.5
Kn------------- Kinston	VIw	---	---	---	---	---	---	---
KpB2----------- Kipling	IIIe	550	---	25	35	6.5	8.5	7.0
KrC3----------- Kipling	VIe	---	---	---	---	5.0	7.5	6.0
KrD3----------- Kipling	VIIe	---	---	---	---	---	6.0	4.0
KrF3----------- Kipling	VIIe	---	---	---	---	---	5.0	4.0
Kv------------- Kirkville	IIw	700	95	40	---	10.5	---	10.0
Le------------- Leeper	IIw	750	80	40	40	11.0	12.0	10.0
LuC3, LuD3------ Luverne	VIe	---	---	---	---	---	8.0	7.0
LV-------------		---	---	---	---	---	---	---
Luverne--------	VIIe							
Smithdale-----	VIIe							

See footnote at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Wheat	Tall fescue	Improved bermuda-grass	Bahiagrass
		Lbs	Bu	Bu	Bu	AUM*	AUM*	AUM*
Ma------------- Mantachie	IIw	650	90	35	40	10.0	---	10.0
Mr------------- Marietta	IIw	750	90	40	40	12.0	12.0	10.5
My------------- Myatt	Vw	---	---	---	---	7.5	---	---
OkD3----------- Okeelala	VIe	---	---	---	---	---	8.0	7.0
OLS------------		---	---	---	---	---	---	---
Okeelala-------	VIIe							
Luverne-------	VIIe							
Smithdale-----	VIIe							
ORL------------		---	---	---	---	5.5	8.0	7.0
Okeelala-------	IVe							
Ruston--------	IVe							
Luverne-------	IVe							
Pa. Pits-Udorthents								
PdA------------ Providence	IIw	800	90	40	40	8.5	10.0	9.0
PdB2----------- Providence	IIe	700	80	35	40	8.5	9.5	8.5
PdC3----------- Providence	IVe	400	45	20	30	6.5	8.5	8.0
PdD3----------- Providence	VIe	---	---	---	---	5.5	7.5	7.5
QuA------------ Quitman	IIw	650	80	30	35	9.0	10.0	10.0
Ro------------- Rosebloom	Vw	---	---	---	---	7.0	7.0	---
RuB2----------- Ruston	IIe	600	65	25	45	8.0	12.0	9.5
RuC3----------- Ruston	IVe	---	55	20	40	6.5	9.5	7.5
SaA------------ Savannah	IIw	700	80	35	40	8.0	8.5	9.0
SaB2----------- Savannah	IIe	650	75	35	40	8.0	8.5	9.0
SaC3----------- Savannah	IVe	400	45	20	25	6.0	7.5	7.5
SaD3----------- Savannah	VIe	---	---	---	---	6.0	6.0	6.0

See footnote at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Wheat	Tall fescue	Improved bermuda-grass	Bahiagrass
		Lbs	Bu	Bu	Bu	AUM*	AUM*	AUM*
SmD3----------- Smithdale	VIe	---	---	---	---	---	8.0	7.0
SNR:								
Smithdale------	VIIe	---	---	---	---	---	---	---
Luverne-------	VIIe	---	---	---	---	---	---	---
Ruston--------	IVe	---	55	20	40	6.5	9.5	7.5
SuD3, SuF3------ Sumter	VIIe	---	---	---	---	---	---	---
TpC2----------- Tippah	IIIe	600	70	30	30	7.5	9.0	8.5
TpC3----------- Tippah	IVe	500	60	20	---	7.0	7.0	7.0
TpD3----------- Tippah	VIe	---	---	---	---	5.5	7.5	7.5
Ur**----------- Urban land	VIIIs	---	---	---	---	---	---	---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Ar-------------- Arkabutla	4W	Slight	Moderate	Slight	Severe	Cherrybark oak------	105	4	Cherrybark oak,
						Eastern cottonwood--	110	---	eastern
						Green ash-----------	95	4	cottonwood,
						Loblolly pine-------	100	9	green ash,
						Nuttall oak---------	110	---	loblolly pine,
						Sweetgum------------	100	10	sweetgum,
						Water oak-----------	100	---	American
						Willow oak----------	100	---	sycamore.
Bb-------------- Bibb	11W	Slight	Severe	Severe	Severe	Loblolly pine-------	100	11	Loblolly pine,
						Sweetgum------------	90	7	sweetgum,
						Water oak-----------	90	6	yellow-poplar,
						Blackgum------------	---	---	eastern
						Yellow-poplar-------	---	---	cottonwood,
									green ash,
									willow oak.
BI**:									
Bibb-----------	11W	Slight	Severe	Severe	Severe	Loblolly pine-------	100	11	Loblolly pine,
						Sweetgum------------	90	7	sweetgum,
						Water oak-----------	90	6	yellow-poplar,
						Blackgum------------	---	---	eastern
						Yellow-poplar-------	---	---	cottonwood,
									green ash,
									willow oak.
Iuka-----------	9W	Slight	Moderate	Moderate	Severe	Loblolly pine-------	100	9	Loblolly pine,
						Sweetgum------------	100	10	eastern
						Eastern cottonwood--	105	10	cottonwood,
						Water oak-----------	100	7	yellow-poplar.
Ca-------------- Catalpa	11W	Slight	Moderate	Moderate	Severe	Eastern cottonwood--	110	11	Eastern
						Green ash-----------	90	4	cottonwood,
						Sweetgum------------	100	10	sweetgum,
						American sycamore---	100	9	yellow-poplar.
						Hackberry-----------	---	---	
						White oak-----------	---	---	
						Yellow-poplar-------	100	8	
Ch-------------- Chenneby	11W	Slight	Moderate	Moderate	Severe	Loblolly pine-------	100	11	Loblolly pine,
						Sweetgum------------	100	10	yellow-poplar,
						Water oak-----------	100	7	sweetgum,
						Yellow-poplar-------	100	9	water oak,
						American sycamore---	100	11	American
									sycamore.
DuB2------------ Dulac	4W	Slight	Moderate	Slight	Moderate	Southern red oak----	70	4	Southern red
						Loblolly pine-------	80	8	oak, loblolly
						Shortleaf pine------	75	8	pine,
						Sweetgum------------	80	6	sweetgum.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Gu------------- Guyton	8W	Slight	Severe	Moderate	Severe	Loblolly pine-------	85	8	Loblolly pine, water oak, green ash.
						Sweetgum-----------	---	---	
						Green ash----------	---	---	
						Cherrybark oak------	---	---	
						Water oak----------	---	---	
						Willow oak---------	78	5	
Ho------------- Houlka	11W	Slight	Moderate	Moderate	Severe	Sweetgum-----------	105	11	Sweetgum, eastern cottonwood, cherrybark oak, green ash, Nuttall oak.
						Green ash----------	85	4	
						Eastern cottonwood--	105	10	
						Cherrybark oak------	105	12	
						Nuttall oak---------	105	---	
						Shumard oak---------	105	5	
						American sycamore---	100	9	
Iu------------- Iuka	9W	Slight	Moderate	Moderate	Severe	Loblolly pine-------	100	9	Loblolly pine, eastern cottonwood, yellow-poplar.
						Sweetgum-----------	100	10	
						Eastern cottonwood--	105	10	
						Water oak----------	100	7	
Kn------------- Kinston	9W	Slight	Severe	Severe	Severe	Sweetgum-----------	95	8	Loblolly pine, yellow-poplar, eastern cottonwood, cherrybark oak, green ash, sweetgum.
						Loblolly pine-------	100	11	
						White oak----------	90	5	
						Eastern cottonwood--	100	9	
						Cherrybark oak------	95	5	
KpB2, KrC3, KrD3----------- Kipling	9C	Slight	Moderate	Moderate	Moderate	Loblolly pine-------	90	9	Loblolly pine, cherrybark oak, Shumard oak, sweetgum.
						Cherrybark oak------	90	8	
						Shumard oak---------	85	5	
						Sweetgum-----------	90	7	
						Water oak----------	80	5	
						White oak----------	80	4	
KrF3----------- Kipling	9C	Moderate	Moderate	Moderate	Moderate	Loblolly pine-------	90	9	Loblolly pine, cherrybark oak, Shumard oak, sweetgum.
						Cherrybark oak------	90	8	
						Shumard oak---------	85	5	
						Sweetgum-----------	90	7	
						Water oak----------	80	5	
						White oak----------	80	4	
Kv------------- Kirkville	10W	Slight	Moderate	Moderate	Severe	Cherrybark oak------	100	10	Cherrybark oak, eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
						Loblolly pine-------	95	10	
						Sweetgum-----------	100	10	
						Water oak----------	100	7	
Le------------- Leeper	11W	Slight	Moderate	Moderate	Severe	Eastern cottonwood--	110	11	Eastern cottonwood, sweetgum, green ash.
						Sweetgum-----------	95	8	
						Green ash----------	90	4	
						American sycamore---	100	9	
LuC3, LuD3------ Luverne	8C	Slight	Moderate	Slight	Moderate	Loblolly pine-------	81	8	Loblolly pine, cherrybark oak, sweetgum.
						Shortleaf pine------	73	8	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
LV**:									
Luverne	8R	Moderate	Moderate	Slight	Moderate	Loblolly pine	81	8	Loblolly pine, cherrybark oak, sweetgum.
						Shortleaf pine	73	8	
Smithdale	8R	Moderate	Moderate	Slight	Slight	Loblolly pine	80	8	Loblolly pine.
						Shortleaf pine	69	8	
Ma Mantachie	10W	Slight	Moderate	Moderate	Severe	Loblolly pine	98	10	Loblolly pine, eastern cottonwood, cherrybark oak, green ash, sweetgum, yellow-poplar.
						Eastern cottonwood	90	7	
						Cherrybark oak	100	10	
						Green ash	80	4	
						Sweetgum	95	8	
						Yellow-poplar	95	7	
Mr Marietta	10W	Slight	Moderate	Moderate	Severe	Eastern cottonwood	105	10	Eastern cottonwood, sweetgum, yellow-poplar, green ash.
						Green ash	90	4	
						Sweetgum	100	10	
						American sycamore	105	10	
						Yellow-poplar	100	8	
My Myatt	9W	Slight	Severe	Severe	Severe	Loblolly pine	88	9	Green ash, sweetgum, eastern cottonwood.
						Sweetgum	92	8	
						Water oak	86	6	
						Southern red oak	---	---	
						White oak	---	---	
						American sycamore	---	---	
						Blackgum	---	---	
						Shumard oak	---	---	
OkD3 Okeelala	8A	Slight	Slight	Slight	Slight	Loblolly pine	90	8	Loblolly pine, cherrybark oak.
						Shortleaf pine	90	8	
OLS**:									
Okeelala	8R	Moderate	Moderate	Slight	Slight	Loblolly pine	90	8	Loblolly pine, cherrybark oak.
						Shortleaf pine	90	8	
Luverne	8R	Moderate	Moderate	Slight	Moderate	Loblolly pine	81	8	Loblolly pine, cherrybark oak, sweetgum.
						Shortleaf pine	73	8	
Smithdale	8R	Moderate	Moderate	Slight	Slight	Loblolly pine	80	8	Loblolly pine.
						Shortleaf pine	69	8	
ORL**:									
Okeelala	8A	Slight	Slight	Slight	Slight	Loblolly pine	90	8	Loblolly pine.
						Shortleaf pine	90	8	
Ruston	8A	Slight	Slight	Slight	Slight	Loblolly pine	84	8	Loblolly pine, cherrybark oak.
						Shortleaf pine	75	8	
						Southern red oak	---	---	
						Post oak	---	---	
						Sweetgum	---	---	
						Hickory	---	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
ORL**:									
Luverne	8C	Slight	Moderate	Slight	Moderate	Loblolly pine	81	8	Loblolly pine, cherrybark oak, sweetgum.
						Shortleaf pine	73	8	
PdA, PdB2 Providence	8W	Slight	Slight	Slight	Severe	Loblolly pine	84	8	Loblolly pine, Shumard oak, sweetgum, yellow-poplar.
						Shortleaf pine	64	7	
						Sweetgum	90	7	
PdC3, PdD3 Providence	8W	Moderate	Slight	Slight	Severe	Loblolly pine	84	8	Loblolly pine, Shumard oak, sweetgum, yellow-poplar.
						Shortleaf pine	64	7	
						Sweetgum	90	7	
QuA Quitman	10W	Slight	Moderate	Slight	Severe	Loblolly pine	92	10	Loblolly pine, slash pine, sweetgum, yellow-poplar.
						Sweetgum	90	11	
Ro Rosebloom	9W	Slight	Severe	Moderate	Severe	Cherrybark oak	95	9	Cherrybark oak, green ash, eastern cottonwood, Nuttall oak, water oak, willow oak, loblolly pine, sweetgum.
						Green ash	95	4	
						Eastern cottonwood	100	9	
						Nuttall oak	95	---	
						Water oak	95	6	
						Willow oak	90	6	
						Sweetgum	95	8	
						American sycamore	80	6	
RuB2, RuC3 Ruston	8A	Slight	Slight	Slight	Slight	Loblolly pine	84	8	Loblolly pine, cherrybark oak.
						Shortleaf pine	75	8	
						Southern red oak	---	---	
						Post oak	---	---	
						Sweetgum	---	---	
						Hickory	---	---	
SaA, SaB2, SaC3, SaD3 Savannah	8W	Slight	Moderate	Slight	Moderate	Loblolly pine	81	8	Loblolly pine, sweetgum.
						Shortleaf pine	76	8	
						Southern red oak	75	4	
SmD3 Smithdale	8A	Slight	Slight	Slight	Slight	Loblolly pine	80	8	Loblolly pine, southern red oak.
						Shortleaf pine	69	8	
SNR**:									
Smithdale	8R	Moderate	Moderate	Slight	Slight	Loblolly pine	80	8	Loblolly pine.
						Shortleaf pine	69	8	
Luverne	8R	Moderate	Moderate	Slight	Moderate	Loblolly pine	81	8	Loblolly pine, sweetgum, cherrybark oak.
						Shortleaf pine	73	8	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
SNR**:									
Ruston	8A	Slight	Slight	Slight	Slight	Loblolly pine	84	8	Loblolly pine. cherrybark oak.
						Shortleaf pine	75	8	
						Southern red oak	---	---	
						Post oak	---	---	
						Sweetgum	---	---	
						Hickory	---	---	
SuD3 Sumter	3C	Moderate	Moderate	Severe	Moderate	Eastern redcedar	40	3	Eastern redcedar.
						Osage-orange	---	---	
SuF3 Sumter	3R	Moderate	Moderate	Severe	Moderate	Eastern redcedar	40	3	Eastern redcedar.
						Osage-orange	---	---	
TpC2, TpC3, TpD3 Tippah	8A	Slight	Slight	Slight	Severe	Loblolly pine	78	8	Cherrybark oak, Shumard oak, loblolly pine, sweetgum, yellow-poplar.
						Cherrybark oak	95	9	
						Shumard oak	95	5	
						White oak	80	4	
						Sweetgum	90	7	
						Yellow-poplar	90	6	

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--WOODLAND UNDERSTORY VEGETATION

(Only the soils suitable for production of commercial trees are listed)

Soil name and map symbol	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
		Lb/acre		Pct
Ar: Arkabutla	Normal	1,200	Pinehill bluestem	28
			Switchcane	26
			Longleaf uniola	17
Bb: Bibb	Normal	1,200	Pinehill bluestem	25
			Cutover muhly	17
			Longleaf uniola	17
			Grassleaf goldaster	13
			Beaked panicum	7
BI*:				
Bibb	Normal	1,200	Pinehill bluestem	25
			Cutover muhly	17
			Longleaf uniola	17
			Grassleaf goldaster	13
			Beaked panicum	7
Iuka	Normal	1,500	Pinehill bluestem	50
			Beaked panicum	10
			Spreading panicum	10
			Brownseed paspalum	10
			Longleaf uniola	10
Ca: Catalpa	Normal	1,300	Pinehill bluestem	20
			Longleaf uniola	20
			Beaked panicum	10
			Poison ivy	5
Ch: Chenneby	Normal	1,300	Pinehill bluestem	40
			Longleaf uniola	25
			Beaked panicum	10
DuB2: Dulac	Normal	1,200	Pinehill bluestem	30
			Longleaf uniola	25
			Beaked panicum	10
			Panicum	10
Gu: Guyton	Normal	1,800	Pinehill bluestem	50
			Chalky bluestem	15
			Silver plumegrass	15
Ho: Houlka	Normal	1,200	Pinehill bluestem	38
			Cutover muhly	35
			Slender bluestem	10
			Beaked panicum	10
			Longleaf uniola	5
Iu: Iuka	Normal	1,500	Pinehill bluestem	50
			Beaked panicum	10
			Spreading panicum	10
			Brownseed paspalum	10
			Longleaf uniola	10
Kn: Kinston	Normal	1,200	Pinehill bluestem	25
			Longleaf uniola	15
			Beaked panicum	10
			Poison ivy	5

See footnote at end of table.

TABLE 8.--WOODLAND UNDERSTORY VEGETATION--Continued

Soil name and map symbol	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
		Lb/acre		Pct
KpB2, KrC3, KrD3, KrF3: Kipling	Normal	1,200	Pinehill bluestem	33
			Common carpetgrass	17
			Panicum	13
Kv: Kirkville	Normal	1,800	Switchgrass	25
			Longleaf uniola	20
			Little bluestem	15
			Pinehill bluestem	15
Le: Leeper	Normal	1,300	Pinehill bluestem	30
			Longleaf uniola	25
			Beaked panicum	15
			Spreading panicum	5
LuC3, LuD3: Luverne	Normal	1,200	Pinehill bluestem	30
			Longleaf uniola	20
			Beaked panicum	20
			Panicum	10
LV*: Luverne	Normal	1,200	Pinehill bluestem	30
			Longleaf uniola	20
			Beaked panicum	20
			Panicum	10
Smithdale	Normal	1,200	Longleaf uniola	30
			Pinehill bluestem	17
			Beaked panicum	12
			Panicum	12
Ma: Mantachie	Normal	2,000	Longleaf uniola	35
			Pinehill bluestem	20
Mr: Marietta	Normal	1,300	Pinehill bluestem	25
			Longleaf uniola	25
			Beaked panicum	15
			Switchcane	5
My: Myatt	Normal	1,300	Longleaf uniola	30
			Pinehill bluestem	25
			Beaked panicum	15
			Panicum	10
OkD3: Okeelala	Normal	950	Longleaf uniola	30
			Pinehill bluestem	20
			Beaked panicum	20
			Panicum	10
OLS*: Okeelala	Normal	950	Longleaf uniola	30
			Pinehill bluestem	20
			Beaked panicum	20
			Panicum	10
Luverne	Normal	1,200	Pinehill bluestem	30
			Longleaf uniola	20
			Beaked panicum	20
			Panicum	10

See footnote at end of table.

TABLE 8.--WOODLAND UNDERSTORY VEGETATION--Continued

Soil name and map symbol	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
		Lb/acre		Pct
OLS*:				
Smithdale	Normal	1,200	Longleaf uniola	30
			Pinehill bluestem	17
			Beaked panicum	12
			Panicum	12
ORL*:				
Okeelala	Normal	950	Longleaf uniola	30
			Pinehill bluestem	20
			Beaked panicum	20
			Panicum	10
Ruston	Normal	1,200	Longleaf uniola	50
			Pinehill bluestem	15
			Beaked panicum	10
			Panicum	10
Luverne	Normal	1,200	Pinehill bluestem	30
			Longleaf uniola	20
			Beaked panicum	20
			Panicum	10
PdA, PdB2, PdC3, PdD3 Providence	Normal	1,900	Beaked panicum	26
			Pinehill bluestem	21
			Longleaf uniola	16
			Switchcane	16
QuA Quitman	Normal	1,800	Longleaf uniola	34
			Pinehill bluestem	23
			Cutover muhly	11
Ro Rosebloom	Normal	1,500	Switchcane	40
			Longleaf uniola	16
			Blackberry	16
			Buttonbush	16
			Beaked panicum	12
RuB2, RuC3 Ruston	Normal	1,200	Longleaf uniola	50
			Pinehill bluestem	15
			Beaked panicum	10
			Panicum	10
SaA, SaB2, SaC3, SaD3 Savannah	Normal	1,000	Longleaf uniola	30
			Pinehill bluestem	30
			Beaked panicum	15
			Panicum	10
SmD3 Smithdale	Normal	1,200	Longleaf uniola	30
			Pinehill bluestem	17
			Beaked panicum	12
			Panicum	12
SNR*:				
Smithdale	Normal	1,200	Longleaf uniola	30
			Pinehill bluestem	17
			Beaked panicum	12
			Panicum	12

See footnote at end of table.

TABLE 8.--WOODLAND UNDERSTORY VEGETATION--Continued

Soil name and map symbol	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
		Lb/acre		Pct
SNR*:				
Luverne	Normal	1,200	Pinehill bluestem	30
			Longleaf uniola	20
			Beaked panicum	20
			Panicum	10
Ruston	Normal	1,200	Longleaf uniola	50
			Pinehill bluestem	15
			Beaked panicum	10
			Panicum	10
SuD3, SuF3 Sumter	Normal	900	Pinehill bluestem	30
			Panicum	20
			Poison ivy	10
TpC2, TpC3, TpD3 Tippah	Normal	1,200	Longleaf uniola	50
			Beaked panicum	25
			Panicum	8

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ar: Arkabutla	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
Bb: Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
BI*:					
Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Iuka	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
Ca: Catalpa	Severe: flooding, too clayey.	Severe: too clayey.	Severe: too clayey.	Severe: too clayey.	Severe: too clayey.
Ch: Chenneby	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
DuB2: Dulac	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
Gu: Guyton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ho: Houlka	Severe: flooding, wetness, percs slowly.	Severe: percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
Iu: Iuka	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
Kn: Kinston	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
KpB2: Kipling	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
KrC3: Kipling	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Moderate: wetness.	Moderate: wetness.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
KrD3: Kipling	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Moderate: wetness.	Moderate: wetness, slope.
KrF3: Kipling	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Kv: Kirkville	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.
Le: Leeper	Severe: flooding, wetness, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: too clayey.	Severe: too clayey.
LuC3: Luverne	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight	Slight.
LuD3: Luverne	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
LV*:					
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ma: Mantachie	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
Mr: Marietta	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: flooding, wetness.
My: Myatt	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
OkD3: Okeelala	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
OLS*:					
Okeelala	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
ORL*:					
Okeelala	Slight	Slight	Moderate: slope.	Slight	Slight.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
ORL*:					
Ruston	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
Luverne	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight	Slight.
Pa*: Pits.					
Udorthents.					
PdA Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
PdB2 Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
PdC3 Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness.
PdD3 Providence	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
QuA Quitman	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Ro Rosebloom	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
RuB2 Ruston	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
RuC3 Ruston	Slight	Slight	Severe: slope.	Slight	Slight.
SaA Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
SaB2 Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
SaC3 Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Moderate: wetness.	Moderate: wetness, droughty.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
SaD3: Savannah	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Moderate: wetness.	Moderate: wetness, droughty, slope.
SmD3: Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
SNR*:					
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ruston	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
SuD3: Sumter	Severe: too clayey.	Severe: too clayey.	Severe: slope, too clayey.	Severe: too clayey, erodes easily.	Severe: too clayey.
SuF3: Sumter	Severe: slope, too clayey.	Severe: slope, too clayey.	Severe: slope, too clayey.	Severe: too clayey, slope, erodes easily.	Severe: slope, too clayey.
TpC2, TpC3: Tippah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Slight.
TpD3: Tippah	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Ur*: Urban land	Variable	Variable	Variable	Variable	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
Ar----------------- Arkabutla	Fair	Good	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
Bb----------------- Bibb	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
BI*:											
Bibb---------------	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Iuka---------------	Poor	Fair	Fair	Good	Good	---	Poor	Poor	Fair	Good	Poor.
Ca----------------- Catalpa	Fair	Fair	Fair	Good	---	Good	Fair	Fair	Fair	Good	Fair.
Ch----------------- Chenneby	Fair	Good	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
DuB2--------------- Dulac	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Gu----------------- Guyton	Fair	Fair	Fair	Fair	Fair	Good	Good	Good	Fair	Fair	Good.
Ho----------------- Houlka	Good	Good	Fair	Good	---	Good	Fair	Good	Good	Good	Fair.
Iu----------------- Iuka	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
Kn----------------- Kinston	Very poor.	Poor	Poor	Poor	Poor	---	Good	Fair	Poor	Poor	Fair.
KpB2--------------- Kipling	Fair	Good	Good	Good	---	---	Poor	Fair	Good	Good	Poor.
KrC3, KrD3--------- Kipling	Fair	Good	Good	Good	---	---	Very poor.	Very poor.	Good	Good	Very poor.
KrF3--------------- Kipling	Poor	Fair	Good	Good	---	---	Very poor.	Very poor.	Fair	Good	Very poor.
Kv----------------- Kirkville	Good	Good	Good	Good	---	---	Poor	Poor	Good	Good	Poor.
Le----------------- Leeper	Good	Good	Fair	Good	---	Good	Fair	Good	Good	Good	Fair.
LuC3, LuD3--------- Luverne	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
LV*:											
Luverne------------	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
Smithdale----------	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Open- land wild- life	Wood- land wild- life	Wetland wild- life
Ma----------------- Mantachie	Fair	Good	Good	Good	---	---	Fair	Fair	Good	Good	Fair.
Mr----------------- Marietta	Good	Good	Good	Good	---	Good	Poor	Poor	Good	Good	Poor.
My----------------- Myatt	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
OkD3--------------- Okeelala	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
OLS*:											
Okeelala-----------	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
Luverne------------	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
Smithdale----------	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
ORL*:											
Okeelala-----------	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
Ruston-------------	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Luverne------------	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
Pa*:											
Pits.											
Udorthents.											
PdA, PdB2---------- Providence	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
PdC3, PdD3--------- Providence	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
QuA---------------- Quitman	Good	Good	Good	Good	---	Good	Fair	Poor	Good	Good	Poor.
Ro----------------- Rosebloom	Poor	Fair	Fair	Fair	---	Fair	Good	Good	Fair	Fair	Good.
RuB2--------------- Ruston	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RuC3--------------- Ruston	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SaA, SaB2---------- Savannah	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
SaC3--------------- Savannah	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SaD3: Savannah	Fair	Good	Good	Fair	Fair	---	Very poor.	Very poor.	Good	Good	Very poor.
SmD3: Smithdale	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
SNR*:											
Smithdale	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
Luverne	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
Ruston	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SuD3: Sumter	Fair	Fair	Fair	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.
SuF3: Sumter	Very poor.	Fair	Fair	Fair	Fair	---	Very poor.	Very poor.	Poor	Fair	Very poor.
TpC2, TpC3, TpD3: Tippah	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
Ur*. Urban land											

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Ar----------------- Arkabutla	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Moderate: wetness, flooding.
Bb----------------- Bibb	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
BI*:						
Bibb---------------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
Iuka---------------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.
Ca----------------- Catalpa	Severe: wetness.	Severe: flooding, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, shrink-swell.	Severe: low strength, flooding, shrink-swell.	Severe: too clayey.
Ch----------------- Chenneby	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Moderate: wetness, flooding.
DuB2--------------- Dulac	Severe: wetness.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Gu----------------- Guyton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Ho----------------- Houlka	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, flooding, shrink-swell.	Moderate: wetness, flooding.
Iu----------------- Iuka	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.
Kn----------------- Kinston	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
KpB2, KrC3--------- Kipling	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
KrD3--------------- Kipling	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: wetness, slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
KrF3: Kipling	Severe: wetness, slope.	Severe: shrink-swell, slope.	Severe: wetness, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
Kv: Kirkville	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: wetness, flooding.
Le: Leeper	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, flooding.	Severe: too clayey.
LuC3: Luverne	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
LuD3: Luverne	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
LV*:						
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ma: Mantachie	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.
Mr: Marietta	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: flooding, wetness.
My: Myatt	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
OkD3: Okeelala	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
OLS*:						
Okeelala	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
ORL*:						
Okeelala	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
ORL*:						
Ruston	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
Luverne	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Pa*:						
Pits.						
Udorthents.						
PdA, PdB2 Providence	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
PdC3 Providence	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Moderate: wetness.
PdD3 Providence	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: low strength.	Moderate: wetness, slope.
QuA Quitman	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Moderate: wetness.
Ro Rosebloom	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
RuB2 Ruston	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
RuC3 Ruston	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
SaA, SaB2 Savannah	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Moderate: wetness, droughty.
SaC3 Savannah	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: low strength, wetness.	Moderate: wetness, droughty.
SaD3 Savannah	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: low strength, wetness, slope.	Moderate: wetness, droughty, slope.
SmD3 Smithdale	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
SNR*:						
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
SNR*:						
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Ruston	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
SuD3 Sumter	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Severe: too clayey.
SuF3 Sumter	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, too clayey.
TpC2, TpC3 Tippah	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Moderate: wetness, shrink-swell, slope.	Severe: low strength.	Slight.
TpD3 Tippah	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
Ur* Urban land	Variable	Variable	Variable	Variable	Variable	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ar------------------ Arkabutla	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Bb------------------ Bibb	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: small stones, wetness.
BI*:					
Bibb----------------	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: small stones, wetness.
Iuka----------------	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
Ca------------------ Catalpa	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack.
Ch------------------ Chenneby	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
DuB2---------------- Dulac	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Gu------------------ Guyton	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ho------------------ Houlka	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
Iu------------------ Iuka	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
Kn------------------ Kinston	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
KpB2, KrC3---------- Kipling	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
KrD3: Kipling	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
KrF3: Kipling	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Kv: Kirkville	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
Le: Leeper	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
LuC3: Luverne	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
LuD3: Luverne	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
LV*:					
Luverne	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Ma: Mantachie	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Mr: Marietta	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness, thin layer.
My: Myatt	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
OkD3: Okeelala	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Moderate: slope.	Poor: thin layer.
OLS*:					
Okeelala	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope, thin layer.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
OLS*:					
Luverne	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
ORL*:					
Okeelala	Slight	Severe: seepage.	Severe: seepage.	Slight	Poor: thin layer.
Ruston	Slight	Moderate: seepage, slope.	Moderate: too sandy.	Slight	Fair: too sandy.
Luverne	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
Pa*:					
Pits.					
Udorthents.					
PdA, PdB2, PdC3 Providence	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
PdD3 Providence	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
QuA Quitman	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
Ro Rosebloom	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
RuB2, RuC3 Ruston	Slight	Moderate: seepage, slope.	Moderate: too sandy.	Slight	Fair: too sandy.
SaA, SaB2, SaC3 Savannah	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
SaD3 Savannah	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
SmD3 Smithdale	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
SNR*:					
Smithdale----------	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Luverne------------	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Ruston-------------	Slight-----------	Moderate: seepage, slope.	Moderate: too sandy.	Slight-----------	Fair: too sandy.
SuD3---------------- Sumter	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
SuF3---------------- Sumter	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
TpC2, TpC3---------- Tippah	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
TpD3---------------- Tippah	Severe: wetness, percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
Ur*----------------- Urban land	Variable---------	Variable---------	Variable---------	Variable---------	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Ar: Arkabutla	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Bb: Bibb	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
BI*:				
Bibb	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
Iuka	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Ca: Catalpa	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Ch: Chenneby	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
DuB2: Dulac	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
Gu: Guyton	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ho: Houlka	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Iu: Iuka	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Kn: Kinston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
KpB2, KrC3, KrD3: Kipling	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
KrF3: Kipling	Poor: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Kv: Kirkville	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Le: Leeper	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
LuC3, LuD3: Luverne	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
LV*:				
Luverne	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Smithdale	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Ma: Mantachie	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Mr: Marietta	Fair: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
My: Myatt	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
OkD3: Okeelala	Good	Probable	Improbable: too sandy.	Fair: too clayey, small stones, slope.
OLS*:				
Okeelala	Poor: slope.	Probable	Improbable: too sandy.	Poor: slope.
Luverne	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Smithdale	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
ORL*:				
Okeelala	Good	Probable	Improbable: too sandy.	Fair: too clayey, small stones.
Ruston	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
Luverne	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Pa*:				
Pits.				
Udorthents.				

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PdA, PdB2, PdC3: Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
PdD3: Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
QuA: Quitman	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Ro: Rosebloom	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
RuB2, RuC3: Ruston	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
SaA, SaB2, SaC3: Savannah	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
SaD3: Savannah	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
SmD3: Smithdale	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
SNR*:				
Smithdale	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Luverne	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Ruston	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
SuD3: Sumter	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
SuF3: Sumter	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
TpC2, TpC3: Tippah	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
TpD3: Tippah	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer, slope.
Ur*: Urban land	Variable	Variable	Variable	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
Ar: Arkabutla	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
Bb: Bibb	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Wetness	Erodes easily, wetness.	Wetness, erodes easily.
BI*:							
Bibb	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Wetness	Erodes easily, wetness.	Wetness, erodes easily.
Iuka	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Wetness, flooding.	Wetness	Wetness.
Ca: Catalpa	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Percs slowly.
Ch: Chenneby	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Moderate: slow refill.	Flooding	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
DuB2: Dulac	Moderate: seepage, slope.	Severe: hard to pack.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly, rooting depth.	Erodes easily, wetness.	Wetness, erodes easily.
Gu: Guyton	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Ho: Houlka	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
Iu: Iuka	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Wetness, flooding.	Wetness	Wetness.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Kn------------------ Kinston	Moderate: seepage.	Severe: wetness.	Slight---------	Flooding-------	Wetness, flooding.	Wetness--------	Wetness.
KpB2, KrC3---------- Kipling	Moderate: slope.	Severe: hard to pack.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.
KrD3, KrF3---------- Kipling	Severe: slope.	Severe: hard to pack.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, wetness, percs slowly.	Slope, percs slowly.
Kv------------------ Kirkville	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding-------	Wetness--------	Wetness--------	Favorable.
Le------------------ Leeper	Slight---------	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
LuC3---------------- Luverne	Moderate: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope----------	Favorable------	Favorable.
LuD3---------------- Luverne	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
LV*:							
Luverne-------------	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
Smithdale-----------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
Ma------------------ Mantachie	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding-------	Wetness, flooding.	Wetness--------	Wetness.
Mr------------------ Marietta	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding-------	Wetness, flooding.	Wetness--------	Favorable.
My------------------ Myatt	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Flooding-------	Wetness, flooding.	Wetness--------	Wetness.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
OkD3: Okeelala	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope, soil blowing.	Slope.
OLS*:							
Okeelala	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope, soil blowing.	Slope.
Luverne	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope	Slope	Slope.
Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
ORL*:							
Okeelala	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope	Soil blowing	Favorable.
ORL*:							
Ruston	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too sandy, soil blowing.	Favorable.
Luverne	Moderate: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope	Favorable	Favorable.
Pa*:							
Pits.							
Udorthents.							
PdA: Providence	Moderate: seepage.	Moderate: thin layer, piping, wetness.	Severe: no water.	Favorable	Wetness, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
PdB2, PdC3: Providence	Moderate: seepage, slope.	Moderate: thin layer, piping, wetness.	Severe: no water.	Slope	Slope, wetness, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
PdD3: Providence	Severe: slope.	Moderate: thin layer, piping, wetness.	Severe: no water.	Slope	Slope, wetness, rooting depth.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
QuA: Quitman	Slight	Moderate: piping, wetness.	Severe: no water.	Favorable	Wetness	Wetness, soil blowing.	Favorable.
Ro: Rosebloom	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
RuB2, RuC3: Ruston	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too sandy, soil blowing.	Favorable.
SaA: Savannah	Moderate: seepage.	Severe: piping.	Severe: no water.	Favorable	Wetness, droughty.	Wetness	Rooting depth.
SaB2, SaC3: Savannah	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Slope	Slope, wetness, droughty.	Wetness	Rooting depth.
SaD3: Savannah	Severe: slope.	Severe: piping.	Severe: no water.	Slope	Slope, wetness, droughty.	Slope, wetness.	Slope, rooting depth.
SmD3: Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
SNR*:							
Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
Luverne	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope	Slope	Slope.
Ruston	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too sandy, soil blowing.	Favorable.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
SuD3, SuF3-------- Sumter	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, slow intake, percs slowly.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
TpC2, TpC3-------- Tippah	Moderate: seepage, slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
TpD3-------------- Tippah	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
Ur*--------------- Urban land	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Ar---------------- Arkabutla	0-7	Silt loam--------	CL, CL-ML	A-4, A-6	0	100	100	85-100	60-95	25-35	7-15
	7-61	Silty clay loam, loam, silt loam.	CL	A-6, A-7	0	100	100	85-100	70-90	30-45	12-25
Bb---------------- Bibb	0-15	Sandy loam, loam	SM, SC-SM, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
	15-60	Sandy loam, loam, silt loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
BI*:											
Bibb-------------	0-15	Sandy loam, loam	SM, SC-SM, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
	15-60	Sandy loam, loam, silt loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
Iuka-------------	0-5	Sandy loam-------	SM, SC-SM, ML, CL-ML	A-4, A-2	0	95-100	90-100	70-100	30-60	<20	NP-7
	5-30	Fine sandy loam, loam, sandy loam.	SM, SC-SM, ML, CL-ML	A-4	0	95-100	85-100	65-100	36-75	<30	NP-7
	30-60	Sandy loam, fine sandy loam, loam.	SM, ML	A-2, A-4	0	95-100	90-100	70-100	25-60	<30	NP-7
Ca---------------- Catalpa	0-15	Silty clay-------	CL, CH	A-7	0	100	100	95-100	85-100	45-52	24-30
	15-61	Silty clay, clay, silty clay loam.	CH	A-7	0	100	100	95-100	85-100	50-75	28-50
Ch---------------- Chenneby	0-7	Silt loam--------	CL, ML, CL-ML	A-4, A-6	0	100	95-100	90-100	60-90	20-35	3-15
	7-50	Loam, silt loam, silty clay loam.	CL, ML, MH, CH	A-4, A-6, A-7	0	100	95-100	90-100	75-95	30-55	8-20
	50-62	Stratified sandy loam to silty clay loam.	SM, ML, SC, CL	A-2-4, A-4	0	100	100	65-90	20-75	<30	NP-8
DuB2------------- Dulac	0-4	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	85-95	20-25	2-7
	4-20	Silt loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	85-95	30-45	11-25
	20-36	Silt loam, silty clay loam.	CL	A-6, A-7	0	100	95-100	90-100	85-95	30-45	11-25
	36-60	Clay, silty clay	CH, MH	A-7	0	95-100	90-100	85-100	80-95	55-85	25-50
Gu---------------- Guyton	0-26	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	26-33	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
	33-84	Loam, silty clay loam, sandy clay loam.	CL, CL-ML, ML	A-6, A-4	0	100	100	95-100	50-95	<40	NP-18
Ho---------------- Houlka	0-6	Clay loam--------	CH, CL	A-7	0	100	100	80-95	55-95	45-55	25-35
	6-60	Clay, silty clay, clay loam.	CH	A-7	0	100	100	95-100	80-97	52-75	30-50

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
Iu--------------- Iuka	0-6	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4, A-2	0	95-100	90-100	70-100	30-60	<20	NP-7
	6-48	Fine sandy loam, loam, sandy loam.	SM, SC-SM, ML, CL-ML	A-4	0	95-100	85-100	65-100	36-75	<30	NP-7
	48-60	Sandy loam, loam, clay loam.	SM, ML, CL	A-2, A-4, A-6	0	95-100	90-100	70-100	25-60	<30	NP-12
Kn--------------- Kinston	0-13	Loam------------	ML, CL, CL-ML	A-4, A-6	0	100	98-100	85-100	50-97	17-40	4-15
	13-70	Loam, clay loam, sandy clay loam.	CL	A-4, A-6, A-7	0	100	95-100	75-100	60-95	20-45	8-22
KpB2------------- Kipling	0-6	Silt loam--------	ML, CL-ML, CL	A-4	0	100	100	90-100	70-90	<30	NP-10
	6-46	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	100	95-100	85-95	38-70	22-45
	46-60	Clay, silty clay	CH, CL	A-7	0	100	100	90-100	75-95	48-80	26-50
KrC3, KrD3, KrF3- Kipling	0-3	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	85-95	30-45	15-25
	3-46	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	100	95-100	85-95	38-70	22-45
	46-60	Clay, silty clay	CH, CL	A-7	0	100	100	90-100	75-95	48-80	26-50
Kv--------------- Kirkville	0-7	Fine sandy loam	ML, SM, CL-ML, SC-SM	A-2, A-4	0	100	100	60-85	30-65	<20	NP-5
	7-60	Loam, sandy loam, fine sandy loam.	ML, SM, CL-ML, SC-SM	A-2, A-4	0	100	100	60-100	30-65	<20	NP-5
Le--------------- Leeper	0-8	Silty clay-------	CH, MH	A-7	0	100	100	90-100	80-95	58-72	26-40
	8-60	Clay, silty clay, silty clay loam.	CH	A-7	0	100	100	95-100	80-97	52-75	30-50
LuC3, LuD3------- Luverne	0-2	Fine sandy loam	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
	2-32	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	32-45	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	0-5	95-100	85-100	85-100	36-76	32-56	2-14
	45-60	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16
LV*:											
Luverne----------	0-12	Sandy loam-------	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
	12-35	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	35-46	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	0-5	95-100	85-100	85-100	36-76	32-56	2-14
	46-76	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16
Smithdale--------	0-14	Sandy loam-------	SM, SC-SM	A-4, A-2	0	100	85-100	60-95	28-49	<20	NP-5
	14-50	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-96	45-75	23-38	7-16
	50-60	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-95	36-70	<30	NP-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
Ma---------------- Mantachie	0-9	Fine sandy loam	CL-ML, SC-SM, SM, ML	A-4	0-5	95-100	90-100	60-85	40-60	<20	NP-5
	9-60	Loam, clay loam, sandy clay loam.	CL, SC, SC-SM, CL-ML	A-4, A-6	0-5	95-100	90-100	80-95	45-80	20-40	5-15
Mr---------------- Marietta	0-6	Fine sandy loam	CL, CL-ML, SC-SM, SC	A-4	0	100	100	80-95	40-75	20-30	5-10
	6-60	Silty clay loam, sandy clay loam, loam.	CL, SC	A-6, A-4	0	100	100	85-100	45-90	25-40	8-20
My---------------- Myatt	0-8	Silt loam--------	ML, CL-ML	A-4	0	95-100	95-100	70-100	60-90	<25	NP-5
	8-45	Loam, sandy clay loam, clay loam.	SM, SC, ML, CL	A-4	0	95-100	95-100	80-100	40-80	<30	NP-10
	45-60	Sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-6, A-4, A-2	0	75-100	60-90	60-80	30-70	15-40	5-20
OkD3-------------- Okeelala	0-2	Fine sandy loam	SM	A-2	0-5	98-100	85-100	75-85	20-35	---	NP
	2-46	Clay loam, sandy clay loam, loam.	SM, SC, CL, ML	A-4, A-6	0	98-100	85-100	80-96	45-75	23-38	7-16
	46-60	Loamy sand, sand, fine sandy loam.	SP-SM, SM	A-2-4, A-3	0	98-100	85-100	50-75	5-35	---	NP
OLS*:											
Okeelala---------	0-11	Sandy loam-------	SM	A-2	0-5	98-100	85-100	75-85	20-35	---	NP
	11-48	Clay loam, sandy clay loam, loam.	SM, SC, CL, ML	A-4, A-6	0	98-100	85-100	80-96	45-75	23-38	7-16
	48-80	Loamy sand, sand, fine sandy loam.	SP-SM, SM	A-2-4, A-3	0	98-100	85-100	50-75	5-35	---	NP
Luverne----------	0-12	Fine sandy loam	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
	12-35	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	35-46	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	0-5	95-100	85-100	85-100	36-76	32-56	2-14
	46-76	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16
Smithdale--------	0-14	Fine sandy loam	SM, SC-SM	A-4, A-2	0	100	85-100	60-95	28-49	<20	NP-5
	14-36	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-96	45-75	23-38	7-16
	36-65	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-95	36-70	<30	NP-10
ORL*:											
Okeelala---------	0-2	Fine sandy loam	SM	A-2	0-5	98-100	85-100	75-85	20-35	---	NP
	2-46	Clay loam, sandy clay loam, loam.	SM, SC, CL, ML	A-4, A-6	0	98-100	85-100	80-96	45-75	23-38	7-16
	46-60	Loamy sand, sand, fine sandy loam.	SP-SM, SM	A-2-4, A-3	0	98-100	85-100	50-75	5-35	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
ORL*:											
Ruston	0-3	Fine sandy loam	SM, ML, CL-ML	A-4, A-2-4	0	100	85-100	65-85	30-55	<20	NP-7
	3-26	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
	26-44	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	0	100	85-100	65-85	30-75	<27	NP-7
	44-60	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
Luverne	0-2	Fine sandy loam	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
	2-32	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	32-45	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	0-5	95-100	85-100	85-100	36-76	32-56	2-14
	45-60	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16
Pa*:											
Pits.											
Udorthents.											
PdA Providence	0-8	Silt loam	ML, CL, CL-ML	A-4	0	100	100	100	85-100	<30	NP-10
	8-20	Silty clay loam, silt loam.	CL	A-7, A-6	0	100	100	95-100	85-100	30-45	11-20
	20-60	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-90	25-40	11-20
PdB2 Providence	0-6	Silt loam	ML, CL, CL-ML	A-4	0	100	100	100	85-100	<30	NP-10
	6-19	Silty clay loam, silt loam.	CL	A-7, A-6	0	100	100	95-100	85-100	30-45	11-20
	19-38	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-90	25-40	11-20
	38-60	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	0	100	95-100	70-95	40-80	20-35	8-18
PdC3, PdD3 Providence	0-3	Silt loam	ML, CL, CL-ML	A-4	0	100	100	100	85-100	<30	NP-10
	3-18	Silty clay loam, silt loam.	CL	A-7, A-6	0	100	100	95-100	85-100	30-45	11-20
	18-50	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-90	25-40	11-20
	50-60	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	0	100	95-100	70-95	40-80	20-35	8-18
QuA Quitman	0-7	Fine sandy loam	SM, ML	A-4, A-2	0	100	100	85-100	30-55	<20	NP-3
	7-20	Fine sandy loam, loam, sandy clay loam.	SC, CL, CL-ML, SC-SM	A-4, A-6	0	100	100	90-100	40-70	20-35	4-15
	20-60	Sandy clay loam, loam, clay loam.	CL, SC	A-6, A-7	0	100	100	90-100	40-65	25-45	11-20
Ro Rosebloom	0-9	Silt loam	CL	A-4, A-6	0	100	100	90-100	80-95	28-40	9-20
	9-60	Silt loam, silty clay loam.	CL	A-4, A-6	0	100	100	90-100	85-100	28-40	9-20

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
RuB2------------- Ruston	0-6	Fine sandy loam	SM, ML, CL-ML	A-4, A-2-4	0	100	85-100	65-85	30-55	<20	NP-7
	6-34	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
	34-46	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	0	100	85-100	65-85	30-75	<27	NP-7
	46-61	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
RuC3------------- Ruston	0-3	Fine sandy loam	SM, ML, CL-ML	A-4, A-2-4	0	100	85-100	65-85	30-55	<20	NP-7
	3-26	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
	26-44	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	0	100	85-100	65-85	30-75	<27	NP-7
	44-60	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
SaA-------------- Savannah	0-10	Fine sandy loam	SM, ML	A-2-4, A-4	0	98-100	90-100	60-100	30-65	<25	NP-4
	10-24	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	98-100	90-100	80-100	40-80	23-40	7-19
	24-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	0	94-100	90-100	60-100	30-80	23-43	7-19
SaB2------------- Savannah	0-6	Fine sandy loam	SM, ML	A-2-4, A-4	0	98-100	90-100	60-100	30-65	<25	NP-4
	6-22	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	98-100	90-100	80-100	40-80	23-40	7-19
	22-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	0	94-100	90-100	60-100	30-80	23-43	7-19
SaC3, SaD3------- Savannah	0-3	Fine sandy loam	SM, ML	A-2-4, A-4	0	98-100	90-100	60-100	30-65	<25	NP-4
	3-16	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	98-100	90-100	80-100	40-80	23-40	7-19
	16-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	0	94-100	90-100	60-100	30-80	23-43	7-19
SmD3------------- Smithdale	0-2	Fine sandy loam	SM, SC-SM	A-4, A-2	0	100	85-100	60-95	28-49	<20	NP-5
	2-46	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-96	45-75	23-38	7-16
	46-60	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-95	36-70	<30	NP-10
SNR*:											
Smithdale-------	0-14	Fine sandy loam	SM, SC-SM	A-4, A-2	0	100	85-100	60-95	28-49	<20	NP-5
	14-36	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-96	45-75	23-38	7-16
	36-65	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-95	36-70	<30	NP-10
Luverne---------	0-12	Fine sandy loam	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
	12-35	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	0-5	95-100	90-100	85-100	50-95	38-70	8-30
	35-46	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	0-5	95-100	85-100	85-100	36-76	32-56	2-14
	46-76	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	0-5	90-100	85-100	70-100	25-65	28-49	3-16

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
SNR*:											
Ruston	0-12	Fine sandy loam	SM, ML, CL-ML	A-4, A-2-4	0	100	85-100	65-85	30-55	<20	NP-7
	12-36	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
	36-41	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	0	100	85-100	65-85	30-75	<27	NP-7
	41-72	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
SuD3, SuF3 Sumter	0-2	Silty clay	CL	A-7, A-6	0	90-100	85-100	80-98	75-90	35-50	16-25
	2-22	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	85-100	78-98	75-95	75-95	35-55	16-32
	22-37	Channery silty clay loam, silty clay loam, silty clay.	CH, CL	A-6, A-7	0	80-100	65-98	60-95	55-95	35-55	16-32
	37-48	Weathered bedrock	---	---	---	---	---	---	---	---	---
TpC2 Tippah	0-6	Silt loam	CL, CL-ML	A-4	0	100	100	90-100	70-90	20-30	4-10
	6-36	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	98-100	90-100	85-95	30-45	11-22
	36-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	99-100	80-100	60-95	50-65	25-40
TpC3, TpD3 Tippah	0-3	Silt loam	CL, CL-ML	A-4	0	100	100	90-100	70-90	20-30	4-10
	3-30	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	98-100	90-100	85-95	30-45	11-22
	30-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	99-100	80-100	60-95	50-65	25-40
Ur* Urban land	0-6	Variable	---	---	---	---	---	---	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Ar---------------Arkabutla	0-7	5-25	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.5	Low----------	0.43	5	1-3
	7-61	20-35	1.45-1.55	0.6-2.0	0.18-0.21	4.5-5.5	Low----------	0.32		
Bb---------------Bibb	0-15	2-18	1.50-1.70	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.20	5	1-3
	15-60	2-18	1.45-1.75	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.37		
BI*:										
Bibb------------	0-15	2-18	1.50-1.70	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.20	5	1-3
	15-60	2-18	1.45-1.75	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.37		
Iuka------------	0-5	6-15	1.35-1.60	2.0-6.0	0.10-0.15	4.5-6.6	Low----------	0.24	5	.5-2
	5-30	8-18	1.35-1.60	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.28		
	30-60	5-15	1.40-1.65	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.20		
Ca---------------Catalpa	0-15	20-40	1.45-1.65	0.2-0.6	0.19-0.22	6.1-8.4	Moderate-----	0.28	5	2-4
	15-61	35-50	1.45-1.60	0.06-0.2	0.18-0.20	6.1-8.4	High---------	0.28		
Ch---------------Chenneby	0-7	12-27	1.30-1.60	0.6-2.0	0.14-0.20	4.5-7.3	Low----------	0.37	5	.5-3
	7-50	12-35	1.30-1.50	0.6-2.0	0.15-0.20	4.5-6.0	Low----------	0.32		
	50-62	8-30	1.30-1.50	2.0-6.0	0.05-0.10	4.5-6.0	Low----------	0.24		
DuB2-------------Dulac	0-4	6-18	1.20-1.40	0.6-2.0	0.20-0.22	4.5-7.3	Low----------	0.49	4-3	.5-2
	4-20	20-30	1.40-1.60	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.43		
	20-36	20-35	1.60-1.80	0.06-0.2	0.10-0.13	4.5-5.5	Low----------	0.43		
	36-60	40-55	1.50-1.70	0.2-0.6	0.10-0.14	4.5-5.5	High---------	0.20		
Gu---------------Guyton	0-26	7-25	1.35-1.65	0.6-2.0	0.20-0.23	3.6-7.3	Low----------	0.43	5	.5-4
	26-33	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.0	Low----------	0.37		
	33-84	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-8.4	Low----------	0.37		
Ho---------------Houlka	0-6	25-40	1.45-1.65	0.6-2.0	0.18-0.22	4.5-5.5	Moderate-----	0.28	5	.5-1
	6-60	35-55	1.40-1.60	<0.06	0.18-0.20	4.5-5.5	High---------	0.32		
Iu---------------Iuka	0-6	6-15	1.35-1.60	2.0-6.0	0.10-0.15	4.5-7.3	Low----------	0.24	5	.5-2
	6-23	8-18	1.35-1.60	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.28		
	23-60	5-15	1.40-1.65	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.20		
Kn---------------Kinston	0-13	5-27	1.30-1.50	0.6-2.0	0.14-0.20	4.5-6.0	Low----------	0.37	5	2-5
	13-70	18-35	1.30-1.50	0.6-2.0	0.14-0.18	4.5-5.5	Low----------	0.32		
KpB2-------------Kipling	0-6	16-29	1.30-1.48	0.06-0.2	0.20-0.22	3.6-6.5	Low----------	0.32	5	.5-2
	6-46	36-60	1.37-1.41	0.06-0.2	0.20-0.22	3.6-8.4	High---------	0.32		
	46-60	40-60	1.57-1.60	<0.06	0.18-0.20	5.1-8.4	Very high----	0.32		
KrC3, KrD3, KrF3-Kipling	0-3	28-32	1.30-1.45	0.06-0.2	0.20-0.22	3.6-6.5	Moderate-----	0.32	5	.5-2
	3-46	36-60	1.37-1.41	0.06-0.2	0.20-0.22	3.6-8.4	High---------	0.32		
	46-60	40-60	1.57-1.60	<0.06	0.18-0.20	5.1-8.4	Very high----	0.32		
Kv---------------Kirkville	0-7	10-20	1.30-1.50	0.6-2.0	0.15-0.15	4.5-6.0	Low----------	0.28	5	.5-2
	7-60	10-18	1.35-1.55	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.28		
Le---------------Leeper	0-8	40-50	1.45-1.65	0.06-0.2	0.18-0.22	5.6-8.4	High---------	0.32	5	1-4
	8-60	35-50	1.40-1.60	<0.06	0.18-0.20	5.6-8.4	High---------	0.32		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
LuC3, LuD3--------	0-2	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low----------	0.24	5	.5-1
Luverne	2-32	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	32-45	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low----------	0.28		
	45-60	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.28		
LV*:										
Luverne----------	0-12	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low----------	0.24	5	.5-1
	12-35	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	35-46	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low----------	0.28		
	46-76	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.28		
Smithdale--------	0-14	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-2
	14-50	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	50-60	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
Ma----------------	0-9	8-20	1.50-1.60	0.6-2.0	0.16-0.20	4.5-6.0	Low----------	0.28	5	1-3
Mantachie	9-60	18-34	1.50-1.60	0.6-2.0	0.14-0.20	3.6-5.5	Low----------	0.28		
Mr----------------	0-6	5-20	1.50-1.55	0.6-2.0	0.14-0.18	5.6-7.8	Low----------	0.28	5	2-4
Marietta	6-60	18-30	1.40-1.55	0.6-2.0	0.14-0.20	5.6-7.8	Low----------	0.28		
My----------------	0-8	10-25	1.30-1.60	0.6-2.0	0.16-0.24	4.5-6.0	Low----------	0.32	5	.5-4
Myatt	8-45	18-35	1.30-1.50	0.2-2.0	0.12-0.20	3.6-5.5	Low----------	0.28		
	45-60	7-30	1.30-1.50	0.2-2.0	0.10-0.20	3.6-5.5	Low----------	0.24		
OkD3--------------	0-2	7-15	1.30-1.50	2.0-6.0	0.09-0.12	4.5-5.5	Low----------	0.20	5	.5-2
Okeelala	2-46	18-35	1.35-1.55	0.6-2.0	0.12-0.15	4.5-5.5	Low----------	0.24		
	46-60	2-18	1.40-1.60	2.0-6.0	0.07-0.12	4.5-5.5	Low----------	0.15		
OLS*:										
Okeelala---------	0-11	7-15	1.30-1.50	2.0-6.0	0.09-0.12	4.5-5.5	Low----------	0.20	5	.5-2
	11-48	18-35	1.35-1.55	0.6-2.0	0.12-0.15	4.5-5.5	Low----------	0.24		
	48-80	2-18	1.40-1.60	2.0-6.0	0.07-0.12	4.5-5.5	Low----------	0.15		
Luverne----------	0-12	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low----------	0.24	5	.5-1
	12-35	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	35-46	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low----------	0.28		
	46-76	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.28		
Smithdale--------	0-14	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-2
	14-36	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	36-65	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
ORL*:										
Okeelala---------	0-2	7-15	1.30-1.50	2.0-6.0	0.09-0.12	4.5-5.5	Low----------	0.20	5	.5-2
	2-46	18-35	1.35-1.55	0.6-2.0	0.12-0.15	4.5-5.5	Low----------	0.24		
	46-60	2-18	1.40-1.60	2.0-6.0	0.07-0.12	4.5-5.5	Low----------	0.15		
Ruston-----------	0-3	2-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low----------	0.28	5	.5-3
	3-26	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-5.5	Low----------	0.28		
	26-44	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-5.5	Low----------	0.28		
	44-60	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-5.5	Low----------	0.28		
Luverne----------	0-2	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low----------	0.24	5	.5-1
	2-32	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	32-45	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low----------	0.28		
	45-60	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.28		
Pa*:										
Pits.										

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Pa*:										
Udorthents.										
PdA-------------	0-8	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	4-3	.5-3
Providence	8-20	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	20-60	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
PdB2------------	0-6	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	4-3	.5-3
Providence	6-19	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	19-38	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
	38-60	12-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
PdC3, PdD3-------	0-3	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	4-3	.5-3
Providence	3-18	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	18-50	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
	50-60	12-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
QuA-------------	0-7	5-15	1.35-1.65	0.6-2.0	0.15-0.24	4.5-6.5	Low----------	0.28	5	1-3
Quitman	7-20	18-35	1.45-1.70	0.6-2.0	0.12-0.17	4.5-5.5	Low----------	0.28		
	20-60	18-35	1.45-1.70	0.2-0.6	0.11-0.17	4.5-5.5	Low----------	0.28		
Ro--------------	0-9	18-25	1.40-1.55	0.6-2.0	0.2-0.22	4.5-6.0	Low----------	0.43	5	1-3
Rosebloom	9-60	20-35	1.40-1.55	0.6-2.0	0.2-0.22	4.5-5.5	Low----------	0.37		
RuB2------------	0-6	2-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low----------	0.28	5	.5-3
Ruston	6-34	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-5.5	Low----------	0.28		
	34-46	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-5.5	Low----------	0.28		
	46-61	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-5.5	Low----------	0.28		
RuC3------------	0-3	2-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low----------	0.28	5	.5-3
Ruston	3-26	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-5.5	Low----------	0.28		
	26-44	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-5.5	Low----------	0.28		
	44-60	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-5.5	Low----------	0.28		
SaA-------------	0-10	3-16	1.50-1.60	0.6-2.0	0.13-0.16	3.6-5.5	Low----------	0.24	4-3	.5-3
Savannah	10-24	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low----------	0.28		
	24-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.24		
SaB2------------	0-6	3-16	1.50-1.60	0.6-2.0	0.13-0.16	3.6-5.5	Low----------	0.24	4-3	.5-3
Savannah	6-22	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low----------	0.28		
	22-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.24		
SaC3, SaD3------	0-3	3-16	1.50-1.60	0.6-2.0	0.13-0.16	3.6-5.5	Low----------	0.24	4-3	.5-3
Savannah	3-16	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low----------	0.28		
	16-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.24		
SmD3------------	0-2	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-2
Smithdale	2-46	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	46-60	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
SNR*:										
Smithdale-------	0-14	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-2
	14-36	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	36-65	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
Luverne---------	0-12	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low----------	0.24	5	.5-1
	12-35	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	35-46	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low----------	0.28		
	46-76	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.28		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
SNR*:										
Ruston	0-12	2-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low	0.28	5	.5-3
	12-36	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-5.5	Low	0.28		
	36-41	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-5.5	Low	0.28		
	41-72	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-5.5	Low	0.28		
SuD3, SuF3 Sumter	0-2	32-50	1.30-1.60	0.06-0.2	0.12-0.17	6.6-8.4	High	0.37	2	2-5
	2-22	35-57	1.15-1.55	0.06-0.2	0.12-0.17	7.4-8.4	High	0.37		
	22-37	35-57	1.15-1.50	0.06-0.2	0.11-0.16	7.4-8.4	Moderate	0.32		
	37-48	---	---	0.00-0.01	---	---	-------------	----		
TpC2 Tippah	0-6	5-20	1.35-1.45	0.6-2.0	0.20-0.22	4.5-6.0	Low	0.43	5	.5-2
	6-36	20-35	1.40-1.50	0.6-2.0	0.19-0.21	4.5-6.0	Moderate	0.43		
	36-60	30-55	1.40-1.55	0.06-0.2	0.16-0.18	4.5-6.0	High	0.24		
TpC3, TpD3 Tippah	0-3	5-20	1.35-1.45	0.6-2.0	0.20-0.22	4.5-6.5	Low	0.43	5	.5-2
	3-30	20-35	1.40-1.50	0.6-2.0	0.19-0.21	4.5-6.0	Moderate	0.43		
	30-60	30-55	1.40-1.55	0.06-0.2	0.16-0.18	4.5-6.0	High	0.24		
Ur* Urban land	0-6	---	---	---	---	---	-------------	----	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hard-ness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In			
Ar: Arkabutla	C	Occasional	Very brief to brief.	Jan-Apr	1.0-1.5	Apparent	Jan-Apr	>60	---	High	High.
Bb: Bibb	D	Frequent	Brief to long.	Dec-May	0.5-1.0	Apparent	Dec-Apr	>60	---	High	Moderate.
BI*: Bibb	D	Frequent	Brief to long.	Dec-May	0.5-1.0	Apparent	Dec-Apr	>60	---	High	Moderate.
Iuka	C	Frequent	Very brief to brief.	Dec-Apr	1.0-3.0	Apparent	Dec-Apr	>60	---	Moderate	High.
Ca: Catalpa	C	Occasional	Very brief to brief.	Dec-Apr	1.5-2.0	Apparent	Feb-Mar	>60	---	High	Low.
Ch: Chenneby	C	Occasional	Very brief to brief.	Dec-Apr	1.0-2.5	Apparent	Jan-Mar	>60	---	High	Moderate.
DuB2: Dulac	C	None	---	---	1.0-2.0	Perched	Dec-Apr	>60	---	Moderate	High.
Gu: Guyton	D	None	---	---	+1-1.5	Perched	Dec-May	>60	---	High	High.
Ho: Houlka	D	Occasional	Very brief to brief.	Jan-Mar	1.0-2.0	Apparent	Jan-Mar	>60	---	High	High.
Iu: Iuka	C	Occasional	Very brief to brief.	Dec-Apr	1.0-3.0	Apparent	Dec-Apr	>60	---	Moderate	High.
Kn: Kinston	B/D	Frequent	Brief to long.	Nov-Jun	0-1.0	Apparent	Nov-Jun	>60	---	High	High.
KpB2, KrC3, KrD3, KrF3: Kipling	D	None	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	High	High.
Kv: Kirkville	C	Occasional	Very brief to brief.	Jan-Apr	1.5-2.5	Apparent	Jan-Apr	>60	---	Moderate	High.
Le: Leeper	D	Occasional	Very brief to brief.	Jan-Mar	1.0-2.0	Apparent	Jan-Mar	>60	---	High	Low.
LuC3, LuD3: Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
LV*: Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
Smithdale	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Ma: Mantachie	C	Occasional	Very brief to brief.	Jan-Mar	1.0-1.5	Apparent	Dec-Mar	>60	---	High	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hard-ness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In			
Mr----------------- Marietta	C	Occasional	Very brief to brief.	Jan-Mar	1.5-2.0	Apparent	Jan-Mar	>60	---	Moderate	Low.
My----------------- Myatt	D	Frequent----	Brief to long.	Nov-Mar	0-1.0	Apparent	Nov-Apr	>60	---	High-----	High.
OkD3--------------- Okeelala	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
OLS*:											
Okeelala----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Luverne-----------	C	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Smithdale---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
ORL*:											
Okeelala----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Ruston------------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Luverne-----------	C	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Pa*:											
Pits.											
Udorthents.											
PdA, PdB2, PdC3, PdD3-------------- Providence	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	Moderate.
QuA---------------- Quitman	C	None--------	---	---	1.5-2.0	Perched	Jan-Mar	>60	---	High-----	Moderate.
Ro----------------- Rosebloom	D	Frequent----	Brief to very long.	Jan-Mar	0-1.0	Apparent	Jan-Mar	>60	---	High-----	Moderate.
RuB2, RuC3--------- Ruston	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
SaA, SaB2, SaC3, SaD3-------------- Savannah	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	High.
SmD3--------------- Smithdale	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
SNR*:											
Smithdale---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
Luverne-----------	C	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Ruston------------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
SuD3, SuF3--------- Sumter	C	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	Low.
TpC2, TpC3, TpD3--- Tippah	C	None--------	---	---	2.0-2.5	Perched	Dec-Apr	>60	---	High-----	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
Ur*: Urban land	---	None	---	---	>2.0	---	---	>10	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--PHYSICAL AND CHEMICAL ANALYSES OF SELECTED SOILS

(Dashes indicate that no determination was made)

Soil name, horizon, and depth in inches	Particle-size distribution: Sand (2-0.05 mm)	Particle-size distribution: Silt (0.05-0.002 mm)	Particle-size distribution: Clay (<0.002 mm)	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: K	Extractable bases: Na	Extractable acidity	Sum of cations	Base saturation	Reaction (1:1 soil: water)	Organic matter
	Pct			Milliequivalents/100 grams						Pct	pH	Pct
Guyton [1]:												
(S87MS-059-2)												
Ap1----- 0 to 5	10.6	72.5	16.9	5.29	0.73	0.14	0.19	7.94	14.29	44.4	5.5	2.6
Ap2----- 5 to 9	12.2	68.9	18.9	5.02	0.56	0.09	0.18	6.04	11.89	49.2	5.7	1.7
Eg1----- 9 to 19	18.9	66.6	14.5	3.26	0.44	0.05	0.16	4.40	8.31	47.1	5.3	0.6
Eg2-----19 to 26	20.1	63.8	16.1	1.27	0.39	0.05	0.14	6.50	8.35	22.2	4.9	0.3
B/E1----26 to 33	13.5	40.2	46.3	2.54	1.29	0.17	0.50	19.47	23.97	18.8	5.0	0.4
B/E2(E)-33 to 42	21.5	64.2	14.3	0.87	0.40	0.04	0.22	7.13	8.66	17.7	5.3	0.4
B/E2(B)-33 to 42	27.0	51.2	21.8	2.72	1.03	0.09	0.54	9.16	13.54	32.3	5.4	0.1
Btg1----42 to 55	27.3	49.0	23.7	2.27	0.99	0.08	0.49	10.31	14.14	27.1	5.5	0.1
2Btg2---55 to 67	33.0	42.6	24.4	4.11	1.42	0.07	0.72	6.55	12.87	49.1	5.4	0.1
2Btg3---67 to 84	31.2	40.3	28.5	5.91	1.95	0.09	1.00	6.53	15.48	57.8	5.2	0.1
Luverne [2]:												
(S86MS-059-4)												
Ap------ 0 to 2	69.5	24.6	5.9	5.88	1.75	0.27	0.04	9.76	17.70	44.9	5.2	5.5
Bt1----- 2 to 20	45.9	11.1	43.0	2.80	2.53	0.23	0.04	14.90	20.50	27.3	4.9	1.1
Bt2-----20 to 32	49.2	11.1	39.7	0.98	2.28	0.29	0.05	15.82	19.42	18.5	4.8	0.2
BC------32 to 45	47.8	14.3	37.9	0.42	2.09	0.29	0.06	16.95	19.81	14.4	4.8	0.1
C-------45 to 60	56.1	9.9	34.0	0.16	1.87	0.29	0.04	15.97	18.33	12.9	4.7	0.1
Mantachie [1]:												
(S86MS-059-10)												
Ap------ 0 to 4	73.2	20.6	6.2	1.90	0.27	0.21	0.04	3.74	6.16	39.3	5.3	1.0
A------- 4 to 9	66.3	26.6	7.1	2.51	0.28	0.13	0.06	4.03	7.01	42.5	5.2	1.0
Bw------ 9 to 17	23.2	54.2	22.6	2.80	0.54	0.15	0.05	11.72	15.26	23.2	4.4	0.3
Bg1-----17 to 34	38.6	43.0	18.4	1.52	0.54	0.11	0.07	10.57	12.81	17.5	4.3	0.2
Bg2-----34 to 43	38.9	43.4	17.7	1.11	0.50	0.10	0.06	10.45	12.22	14.5	4.3	0.1
Cg------43 to 60	33.4	47.1	19.5	1.58	0.68	0.11	0.13	10.99	13.49	18.5	4.3	0.1
Okeelala [3]:												
(S87MS-059-7)												
A------- 0 to 7	68.3	27.4	4.3	0.38	0.11	0.12	0.01	4.50	5.12	12.1	4.7	1.6
E------- 7 to 13	79.3	16.7	4.0	0.29	0.13	0.06	0.01	1.91	2.40	20.4	5.3	0.3
E/B-----13 to 18	76.6	14.1	9.3	1.51	0.49	0.10	0.02	2.65	4.77	44.4	5.6	0.3
Bt1-----18 to 26	74.0	6.4	19.6	3.25	1.63	0.21	0.03	3.86	8.98	57.0	5.7	0.2
Bt2-----26 to 43	73.5	8.2	18.3	2.74	1.44	0.15	0.01	3.24	7.58	57.3	5.9	0.2
Bt3-----43 to 53	76.2	2.9	20.9	3.87	1.93	0.17	0.02	4.14	10.13	59.1	5.7	0.1
C1------53 to 84	81.8	3.2	15.0	1.22	1.76	0.14	0.02	5.76	8.90	35.3	5.1	0.1
C2------84 to 101	83.5	2.1	14.4	0.81	1.30	0.12	0.02	6.23	8.48	26.5	5.1	0.1
C3-----101 to 126	89.5	1.4	9.1	1.19	1.55	0.12	0.02	3.86	6.74	42.7	5.0	0.1
Savannah [1]:												
(S87MS-059-1)												
Ap------ 0 to 6	63.2	30.2	6.6	3.78	0.35	0.22	0.06	2.43	6.84	64.5	6.4	1.3
Bt1----- 6 to 14	37.0	41.2	21.8	6.61	0.61	0.13	0.05	2.69	10.09	73.3	6.7	0.2
Bt2-----14 to 27	50.4	33.1	16.5	2.26	0.05	0.09	0.03	5.97	8.85	32.5	4.7	0.1
Btx1----27 to 38	63.8	21.8	14.4	0.99	0.65	0.09	0.03	6.50	8.26	21.3	4.6	0.1
Btx2----38 to 54	67.0	14.5	18.5	1.17	0.76	0.11	0.04	8.43	10.51	19.8	4.5	0.1
Bt------54 to 60	70.2	12.1	17.7	1.12	0.69	0.11	0.03	8.61	10.56	18.5	4.5	0.1

See footnotes at end of table.

TABLE 18.--PHYSICAL AND CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name, horizon, and depth in inches	Particle-size distribution: Sand (2-0.05 mm)	Particle-size distribution: Silt (0.05-0.002 mm)	Particle-size distribution: Clay (<0.002 mm)	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: K	Extractable bases: Na	Extractable acidity	Sum of cations	Base saturation	Reaction (1:1 soil: water)	Organic matter
	Pct	Pct	Pct	Milliequivalents/100 grams	Milliequivalents/100 grams	Milliequivalents/100 grams	Milliequivalents/100 grams	Milliequivalents/100 grams	Milliequivalents/100 grams	Pct	pH	Pct
Smithdale [1]:												
(S87MS-059-3)												
A------- 0 to 3	65.9	29.6	4.5	1.46	0.30	0.16	0.08	5.66	7.66	26.1	5.1	3.1
E------- 3 to 14	72.5	23.2	4.3	0.30	0.12	0.06	0.08	1.21	1.77	31.6	5.5	0.2
Bt1-----14 to 26	67.8	3.4	28.8	1.08	1.75	0.21	0.05	7.80	10.89	28.4	5.2	0.2
Bt2-----26 to 36	75.4	1.9	22.7	0.25	1.28	0.13	0.07	6.85	8.58	20.2	5.1	0.2
Bt3-----36 to 48	77.3	2.3	20.4	0.20	1.14	0.11	0.07	6.07	7.59	20.0	5.1	0.1
Bt4-----48 to 60	76.2	3.2	20.6	0.15	1.16	0.11	0.07	6.37	7.86	18.9	5.2	0.1

[1] This is the typical pedon for the series in the survey area. See the section "Soil Series and Their Morphology" for the description and location of sites sampled.

[2] About 2.5 miles west of Marietta on State Highway 366, 0.5 mile southwest on a county road, 1 mile southeast on a county road, 200 feet west in a wooded area; NE1/4NW1/4 sec. 13, T. 7, R. 8.

[3] About 2.5 miles east of Baldwin in a wooded area; NW1/4SE1/4 sec. 20, T. 6 S., R. 7 E.

TABLE 19.--ENGINEERING INDEX TEST DATA

(Tests by the Mississippi State Highway Department Testing Division, Jackson, Mississippi. Dashes indicate that data were not available. LL means liquid limit; PI, plasticity index; MD, maximum dry density; OM, optimum moisture; and NP, nonplastic)

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution								LL	PI	Moisture density	
			Percentage passing sieve--			Percentage smaller than--								
	AASHTO	Unified	No. 10	No. 40	No. 60	.074 mm	.05 mm	.02 mm	.005 mm	.002 mm			MD	OM
											Pct		Lb/ cu ft	Pct
Dulac silt loam [1]:														
(S86MS-059-05)														
Ap ------ 0 to 4	A-4-(5)	ML	100	98	96	90	78	56	25	19	29	6	107.0	16.1
Bt1 ----- 4 to 12	A-6-(12)	CL	100	98	96	92	81	58	29	23	35	12	108.8	16.6
Bt2 -----12 to 20	A-7-(22)	CL	100	98	97	94	87	63	39	31	46	21	105.6	18.1
Btx -----20 to 36	A-6-(13)	CL	100	98	96	90	78	56	31	26	38	25	107.9	17.4
2Bt1 ----36 to 52	A-7-(39)	CH	100	99	98	93	83	66	51	46	63	37	102.0	21.4
2Bt2 ----52 to 60	A-7-(67)	CH	100	100	99	95	88	76	60	57	90	60	98.8	24.3
Luverne fine sandy loam [2]:														
(S86MS-059-05)														
Ap ----- 0 to 2	A-4-(0)	SM	100	99	95	38	20	15	7	5	---	NP	97.6	20.6
Bt1 ---- 2 to 20	A-7-(21)	CH	100	100	99	63	52	48	44	41	64	35	100.0	22.4
Bt2 ----20 to 32	A-7-(18)	MH	100	98	96	61	50	45	42	38	64	32	104.3	20.9
Bt3 ----32 to 45	A-7-(11)	CL	100	95	92	57	47	41	36	33	50	22	106.7	19.3
BC -----45 to 60	A-7-(11)	CL	100	100	99	56	43	42	36	34	50	24	107.2	18.7

[1] This is the typical pedon for the series in the survey area. See the section "Soil Series and Their Morphology" for the description and location of sites sampled.

[2] About 2.5 miles west of Marietta on State Highway 366, 0.5 mile southwest on a county road, 1 mile southeast on a county road, 200 feet west in a wooded area; NE1/4NW1/4 sec. 13, T. 7, R. 7.

TABLE 20.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Arkabutla	Fine-silty, mixed, acid, thermic Aeric Fluvaquents
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Catalpa	Fine, montmorillonitic, thermic Fluvaquentic Hapludolls
Chenneby	Fine-silty, mixed, thermic Fluvaquentic Dystrochrepts
Dulac	Fine-silty, mixed, thermic Oxyaquic Fragiudalfs
Guyton	Fine-silty, siliceous, thermic Typic Glossaqualfs
Houlka	Fine, montmorillonitic, acid, thermic Vertic Haplaquepts
Iuka	Coarse-loamy, siliceous, acid, thermic Aquic Udifluvents
Kinston	Fine-loamy, siliceous, acid, thermic Typic Fluvaquents
Kipling	Fine, montmorillonitic, thermic Vertic Paleudalfs
Kirkville	Coarse-loamy, siliceous, thermic Fluvaquentic Dystrochrepts
Leeper	Fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts
Luverne	Clayey, mixed, thermic Typic Hapludults
Mantachie	Fine-loamy, siliceous, acid, thermic Aeric Fluvaquents
Marietta	Fine-loamy, siliceous, thermic Fluvaquentic Eutrochrepts
Myatt	Fine-loamy, siliceous, thermic Typic Endoaquults
Okeelala	Fine-loamy, siliceous, thermic Ultic Hapludalfs
Providence	Fine-silty, mixed, thermic Typic Fragiudalfs
Quitman	Fine-loamy, siliceous, thermic Aquic Paleudults
Rosebloom	Fine-silty, mixed, acid, thermic Typic Fluvaquents
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
Savannah	Fine-loamy, siliceous, thermic Typic Fragiudults
Smithdale	Fine-loamy, siliceous, thermic Typic Hapludults
Sumter	Fine-silty, carbonatic, thermic Rendollic Eutrochrepts
Tippah	Fine-silty, mixed, thermic Aquic Paleudalfs
Urban land.	

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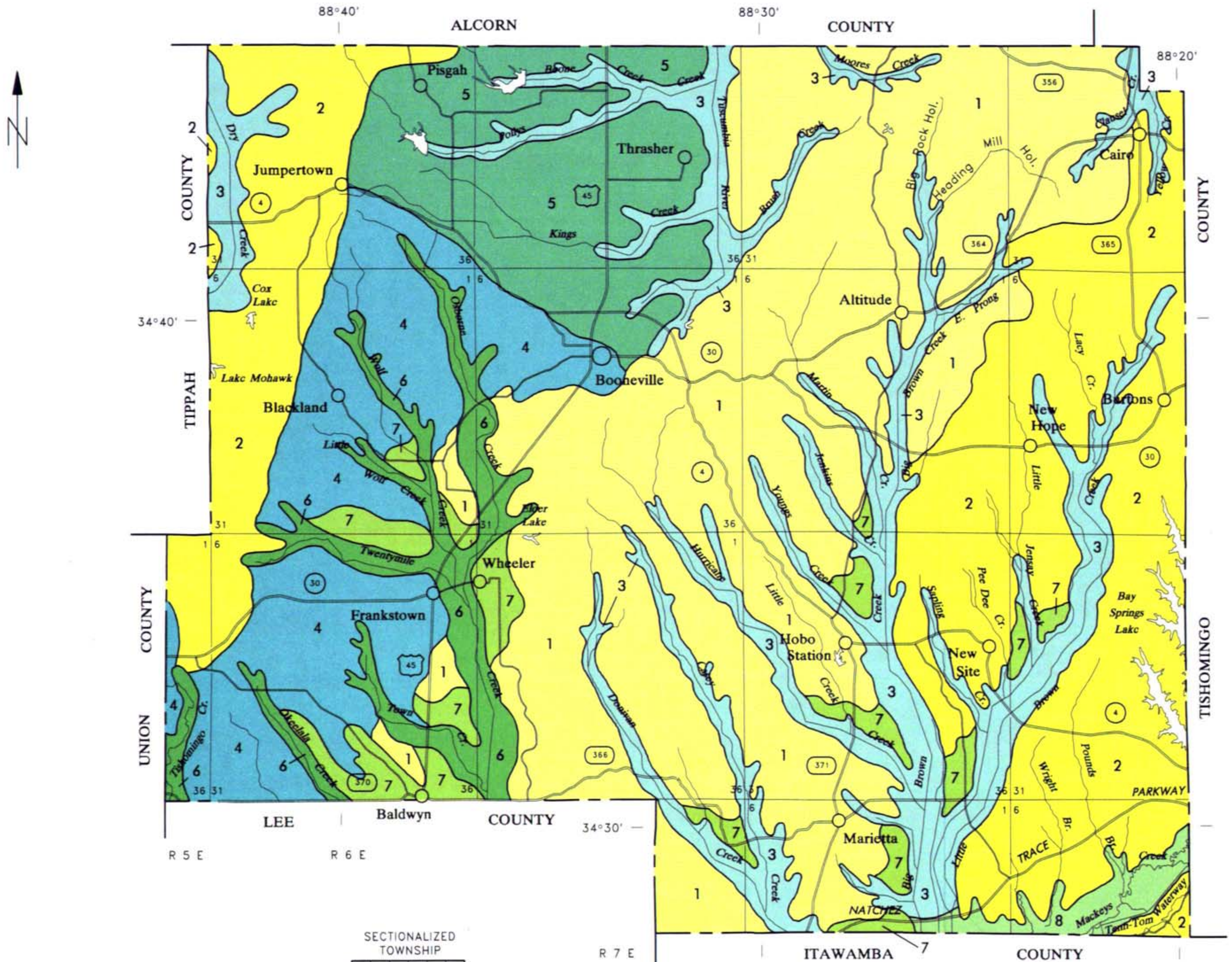
NRCS Accessibility Statement



SOIL LEGEND *

1	OKEELALA–LUVERNE–SMITHDALE ASSOCIATION
2	SMITHDALE–LUVERNE–RUSTON ASSOCIATION
3	MANTACHIE–IUKA ASSOCIATION
4	KIPLING–SUMTER ASSOCIATION
5	PROVIDENCE–SAVANNAH–CHENNEBY ASSOCIATION
6	LEEPER–MARIETTA–CATALPA ASSOCIATION
7	SAVANNAH ASSOCIATION
8	BIBB–IUKA ASSOCIATION

*The units on this legend are described in the text under the heading "General Soil Map Units."

Compiled 1992

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
MISSISSIPPI AGRICULTURAL AND FORESTRY EXPERIMENT STATION

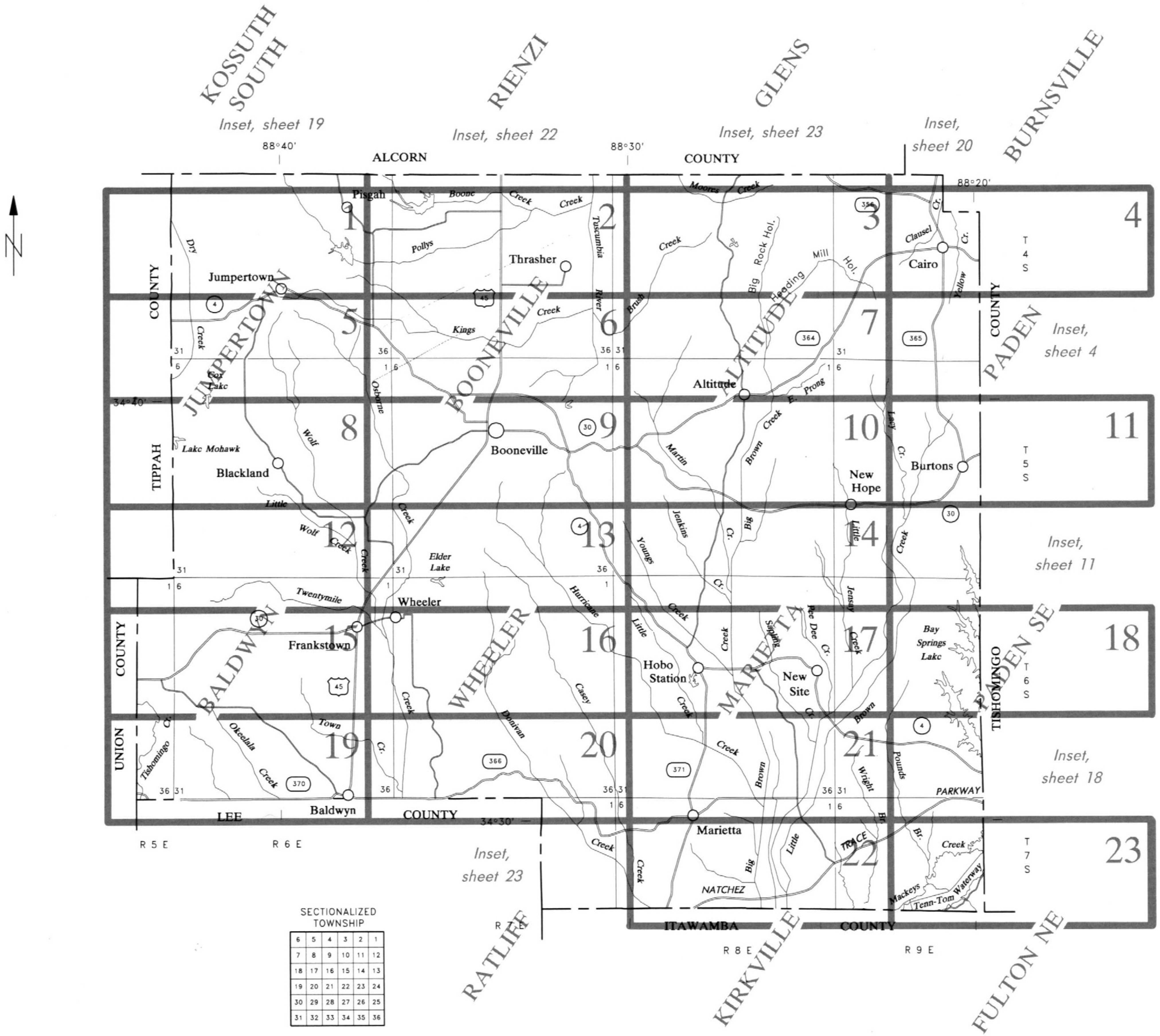
GENERAL SOIL MAP

PRENTISS COUNTY, MISSISSIPPI

Scale 1:190,080

1 0 1 2 3 4 Miles

1 0 4 8 Km



Original text from each individual map sheet read:
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1980 -1981 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

INDEX TO MAP SHEETS

PRENTISS COUNTY, MISSISSIPPI

Scale 1:190,080

SOIL LEGEND

Soil map symbols and map unit names are alphabetical. Map symbols are letters or a combination of letters and numbers. The first letter, always a capital, and second letter, a small letter, are the initial letters of the kind of soil except in order three map units. Order three map units, in addition to having all capital letter symbols, are further indicated by the footnote 1/. A capital letter that follows a small letter indicates the class of slope. Symbols that consist of a large and small letter only are nearly level soils or miscellaneous areas. A number of 2 following the slope letter indicates the soil is moderately eroded; a number of 3 following the slope letter indicates that the soil is severely eroded.

SYMBOL	NAME
Ar	Arkabutla silt loam, occasionally flooded
Bb	Bibb sandy loam, frequently flooded
BI	Bibb and luka sandy loams, frequently flooded 1/
Ca	Catalpa silty clay, occasionally flooded
Ch	Chenneby silt loam, occasionally flooded
DuB2	Dulac silt loam, 2 to 5 percent slopes, eroded
Gu	Guyton silt loam
Ho	Houlka clay loam, occasionally flooded
Iu	Iuka fine sandy loam, occasionally flooded
Kn	Kinston loam, frequently flooded
KpB2	Kipling silt loam, 2 to 5 percent slopes, eroded
KrC3	Kipling silty clay loam, 5 to 8 percent slopes, severely eroded
KrD3	Kipling silty clay loam, 8 to 12 percent slopes, severely eroded
KrF3	Kipling silty clay loam, 12 to 40 percent slopes severely eroded
Kv	Kirkville fine sandy loam, occasionally flooded
Le	Leeper silty clay, occasionally flooded
LuC3	Luverne fine sandy loam, 5 to 8 percent slopes, severely eroded
LuD3	Luverne fine sandy loam, 8 to 12 percent slopes, severely eroded
LV	Luverne and Smithdale sandy loams, 5 to 45 percent slopes 1/
Ma	Mantachie fine sandy loam, occasionally flooded
Mr	Marietta fine sandy loam, occasionally flooded
My	Myatt silt loam, frequently flooded
OkD3	Okeelala fine sandy loam, 8 to 12 percent slopes, severely eroded
OLS	Okeelala, Luverne, and Smithdale soils, 5 to 45 percent slopes 1/
ORL	Okeelala, Ruston, and Luverne fine sandy loams, 3 to 8 percent slopes, severely eroded 1/
Pa	Pits-Udorthents complex
PdA	Providence silt loam, 0 to 2 percent slopes
PdB2	Providence silt loam, 2 to 5 percent slopes, eroded
PdC3	Providence silt loam, 5 to 8 percent slopes, severely eroded
PdD3	Providence silt loam, 8 to 12 percent slopes, severely eroded
QuA	Quitman fine sandy loam, 0 to 2 percent slopes
Ro	Rosebloom silt loam, frequently flooded
RuB2	Ruston fine sandy loam, 2 to 5 percent slopes, eroded
RuC3	Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded
SaA	Savannah fine sandy loam, 0 to 2 percent slopes
SaB2	Savannah fine sandy loam, 2 to 5 percent slopes, eroded
SaC3	Savannah fine sandy loam, 5 to 8 percent slopes, severely eroded
SaD3	Savannah fine sandy loam, 8 to 12 percent slopes, severely eroded
SmD3	Smithdale fine sandy loam, 8 to 12 percent slopes, severely eroded
SNR	Smithdale, Luverne, and Ruston fine sandy loams, 2 to 45 percent slopes 1/
SuD3	Sumter silty clay, 8 to 12 percent slopes, severely eroded
SuF3	Sumter silty clay, 12 to 40 percent slopes, severely eroded
TpC2	Tippah silt loam, 5 to 8 percent slopes, eroded
TpC3	Tippah silt loam, 5 to 8 percent slopes, severely eroded
TpD3	Tippah silt loam, 8 to 12 percent slopes, severely eroded
Ud	Urban land

1/ The composition of these units is more variable than that of the others in the survey area, but has been controlled well enough to be interpreted for the expected use of the soils.

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state, or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline and neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oilfield, cemetery, or flood pool (FLOOD POOL LINE)

STATE COORDINATE TICK
1 890 000 FEET

LAND DIVISION CORNER
(sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate (173)
- Federal (287)
- State (52)
- County, farm or ranch (1283)

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or Small (Named where applicable) (water)

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban area) (occupied)
- Church
- School
- Indian mound (label) (Indian Mound)
- Located object (label) (Tower)
- Tank (label) (Gas)
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) (CANAL)
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial (water)
- Intermittent (Int)

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS (Ro TpD3)

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

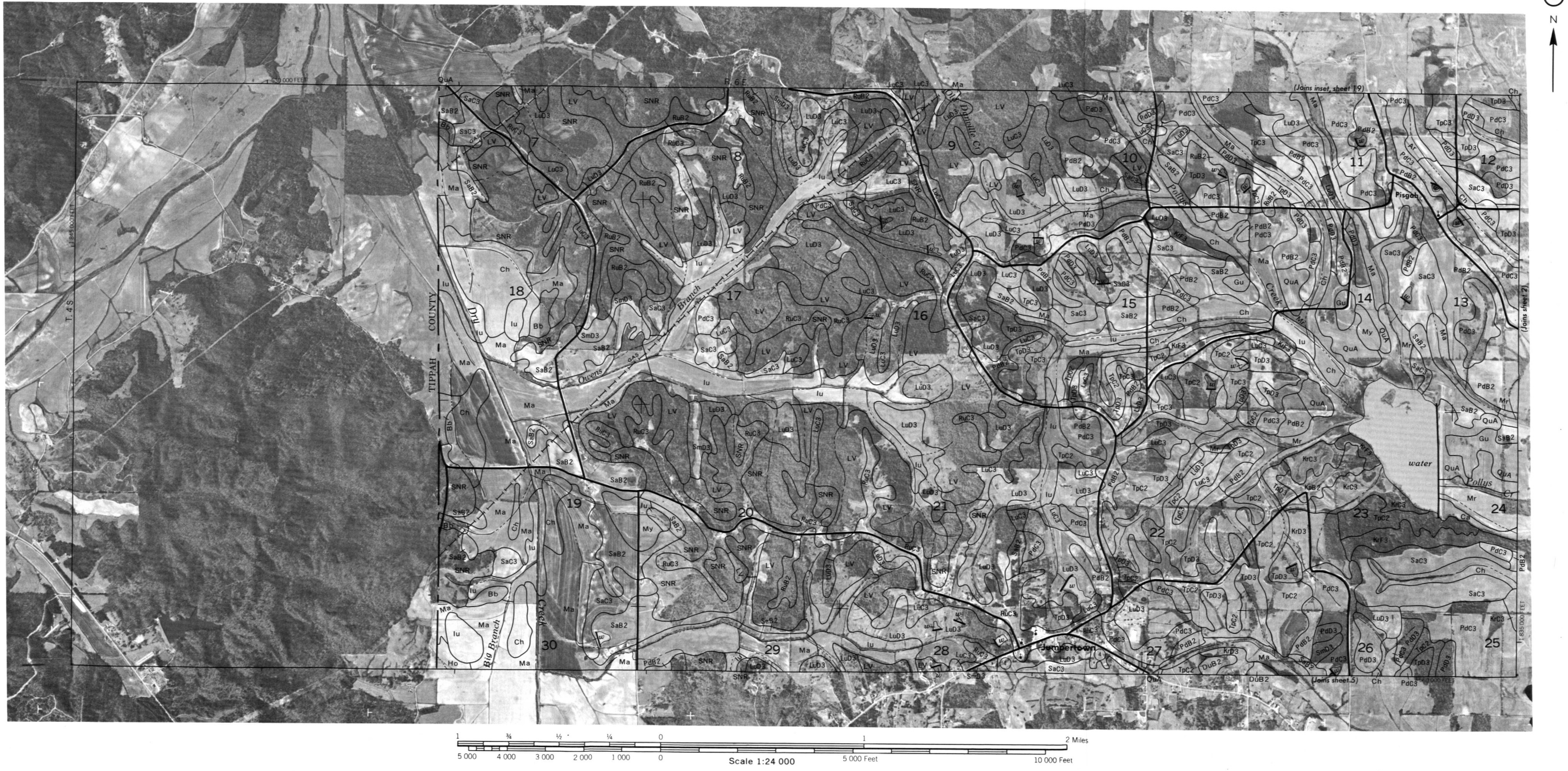
DEPRESSION OR SINK

SOIL SAMPLE (normally not shown)

MISCELLANEOUS

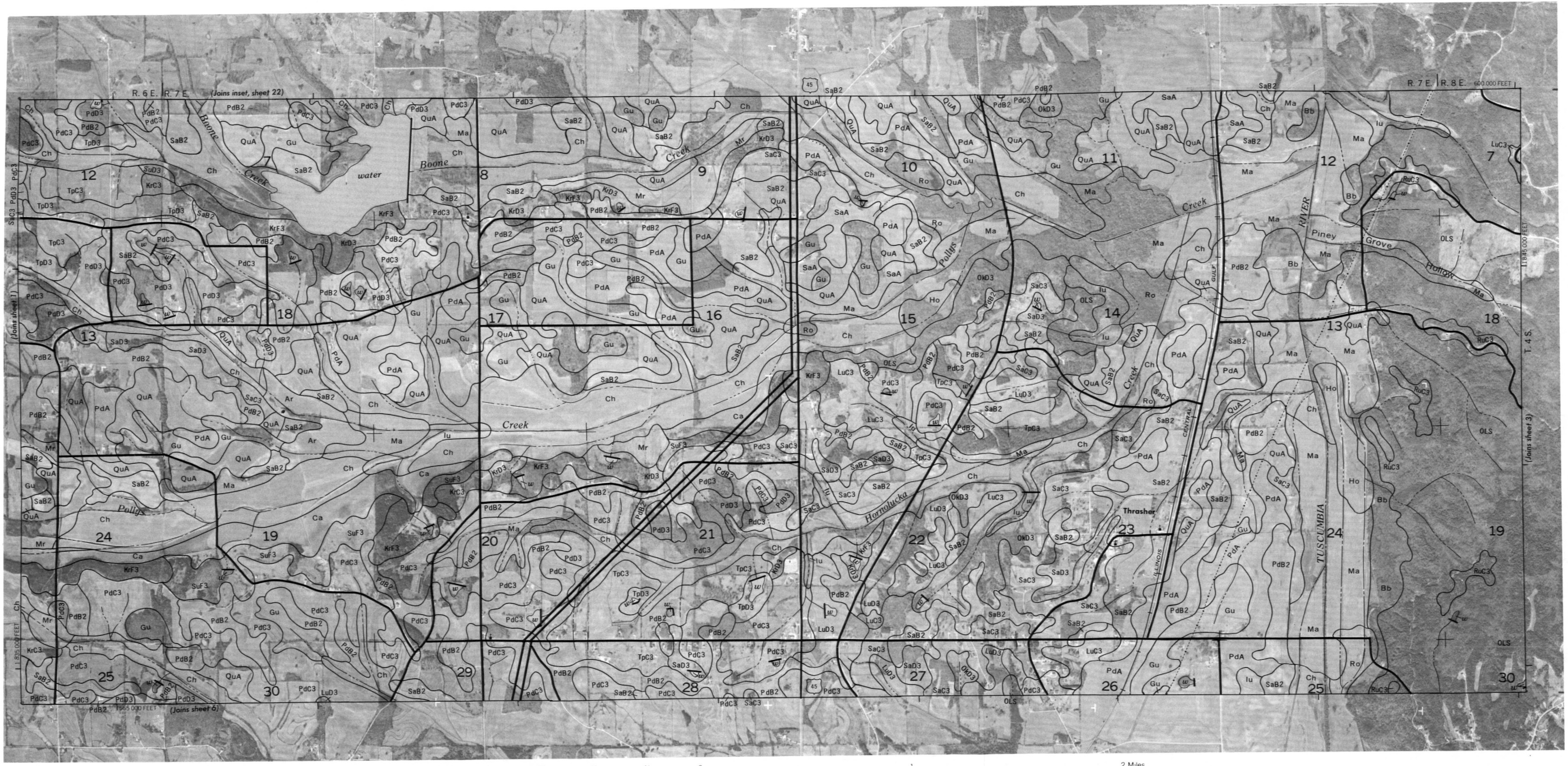
- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

SOIL SURVEY OF PRENTISS COUNTY, MISSISSIPPI — SHEET NUMBER 1



SOIL SURVEY OF PRENTISS COUNTY, MISSISSIPPI — SHEET NUMBER 2

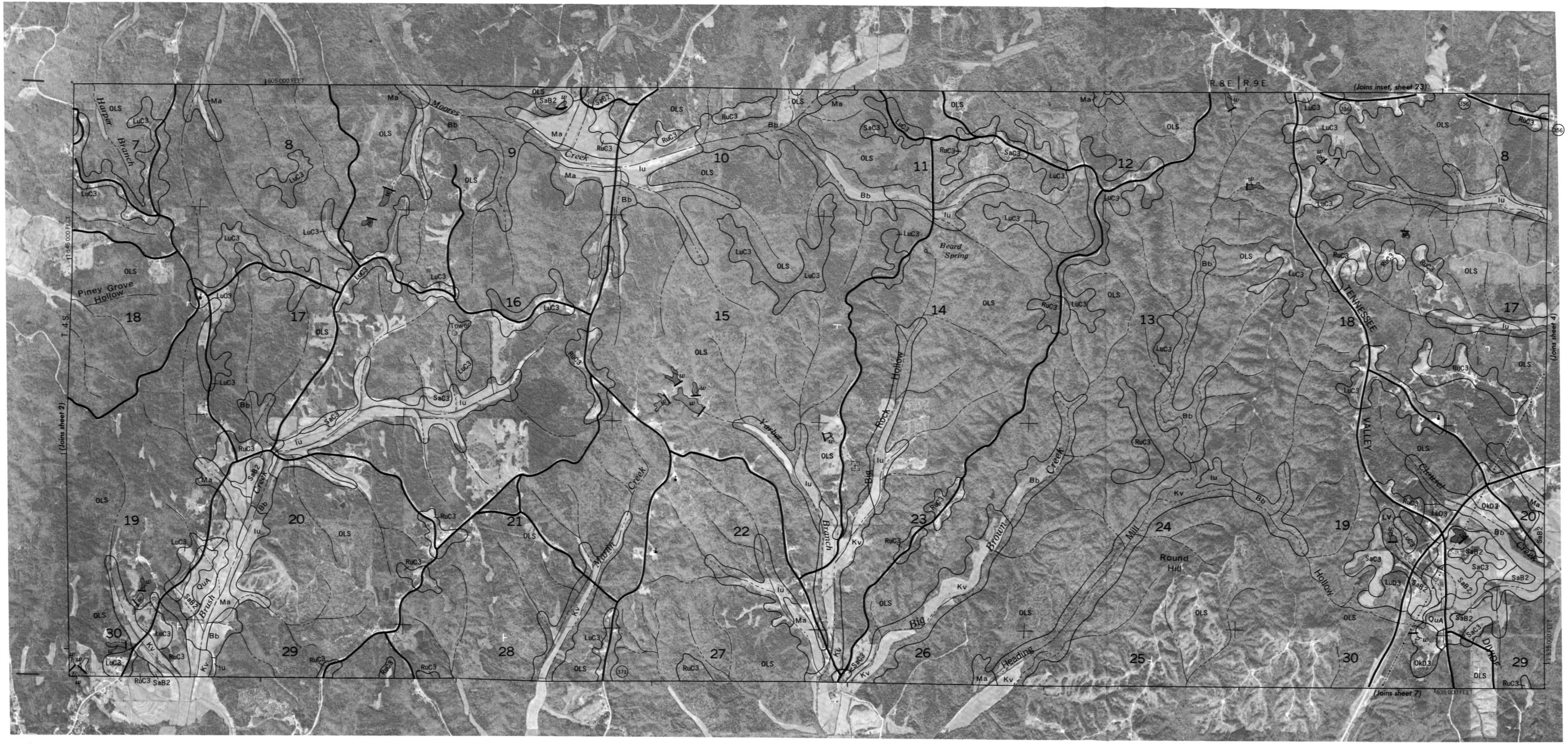
N



1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

Scale 1:24 000



1 ¾ ½ ¼ 0 1 2 Miles

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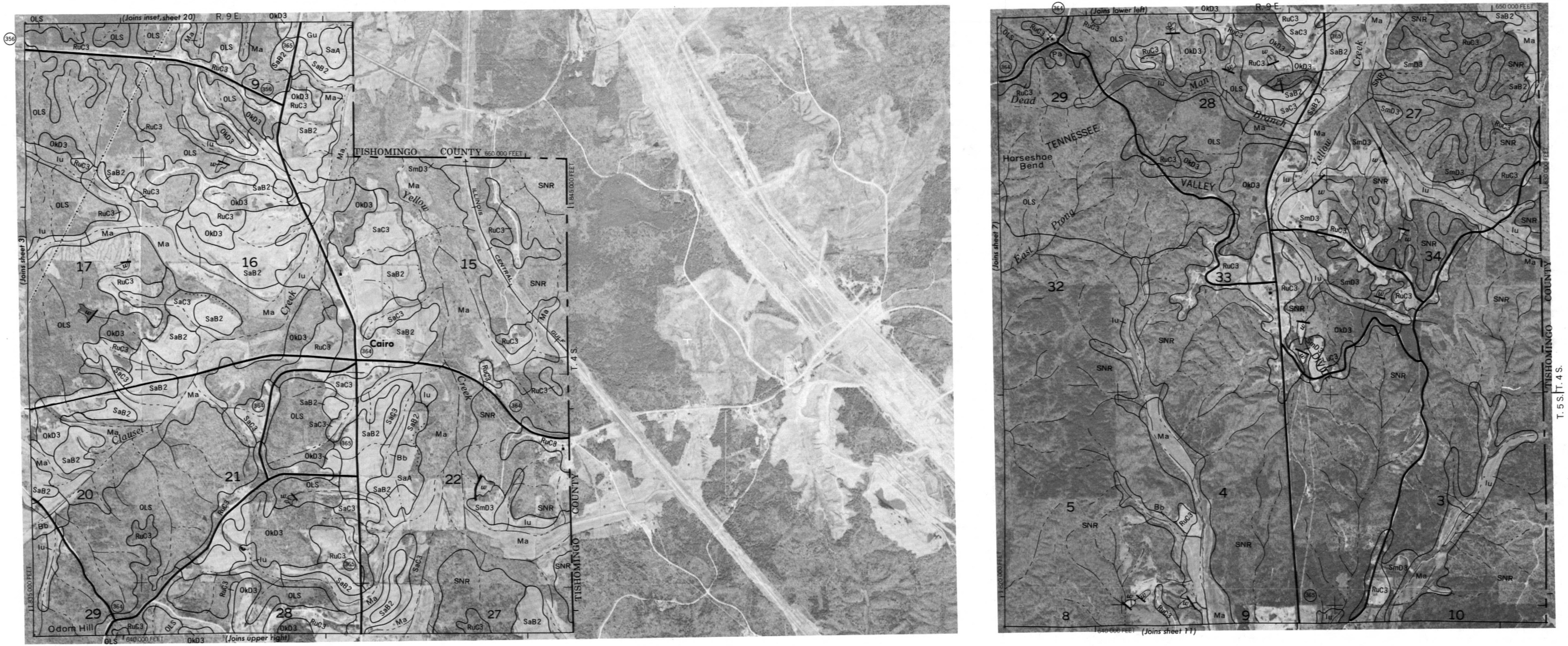
Scale 1:24 000

SOIL SURVEY OF PRENTISS COUNTY, MISSISSIPPI — SHEET NUMBER 4

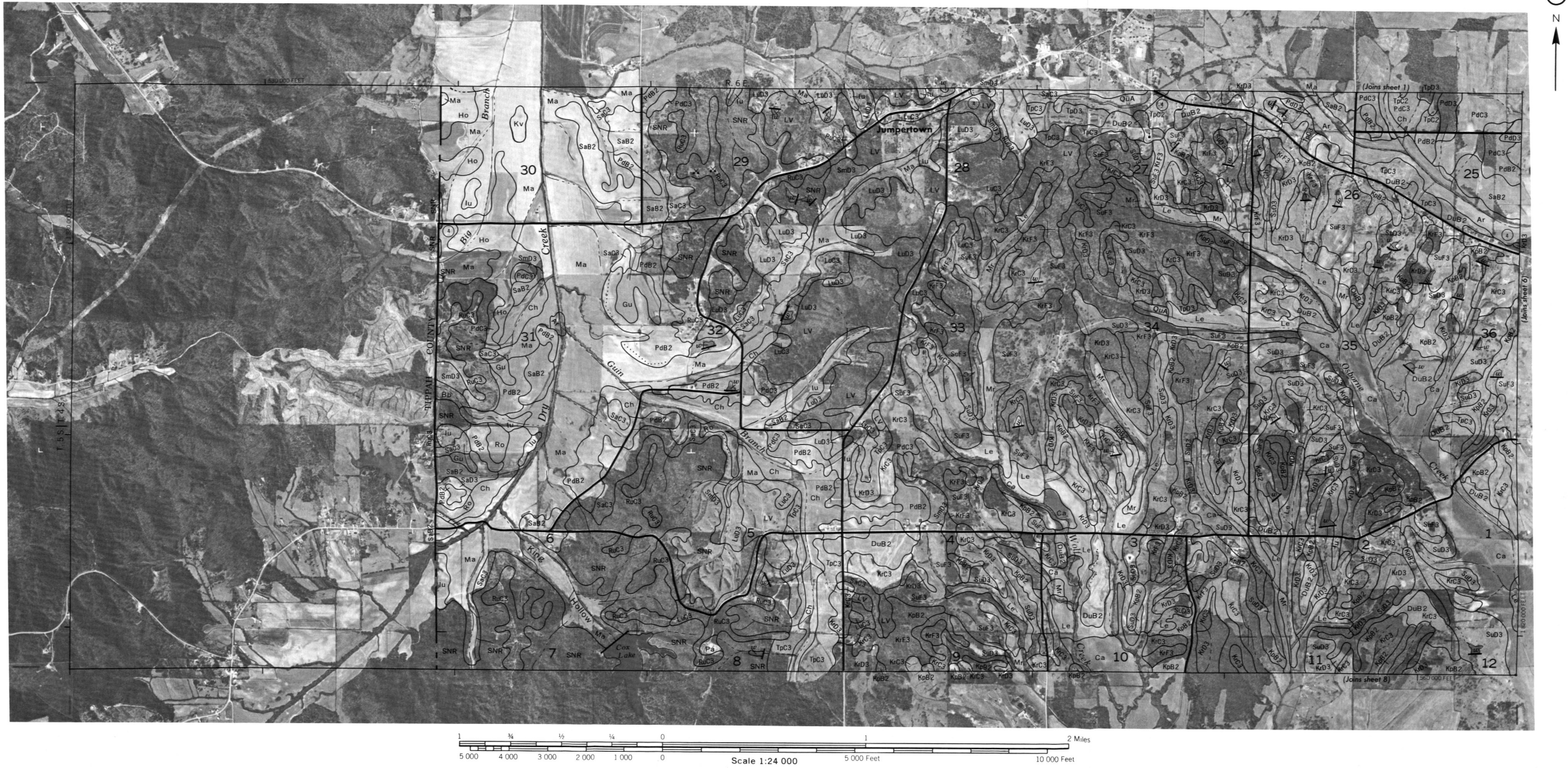
N

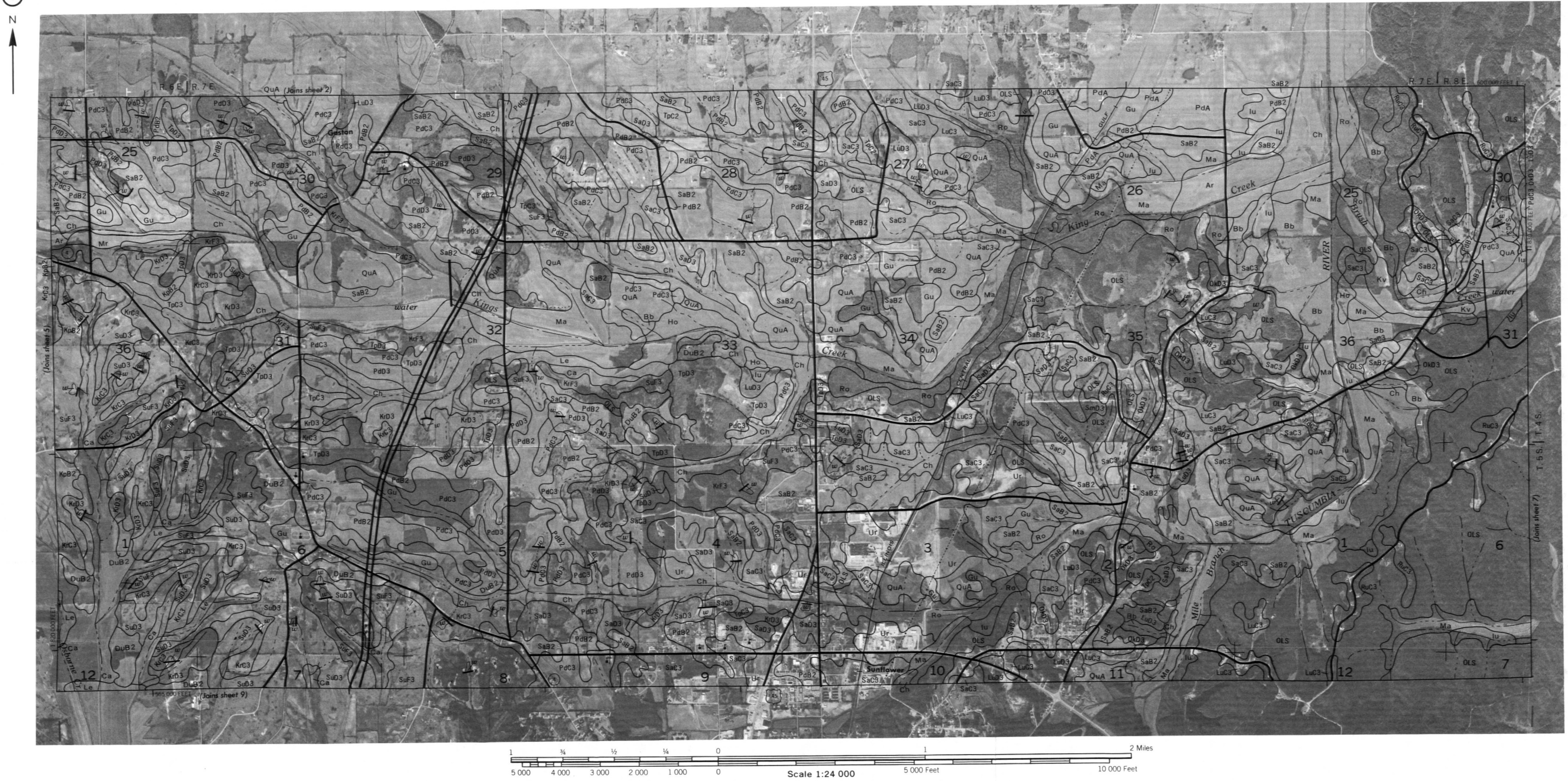


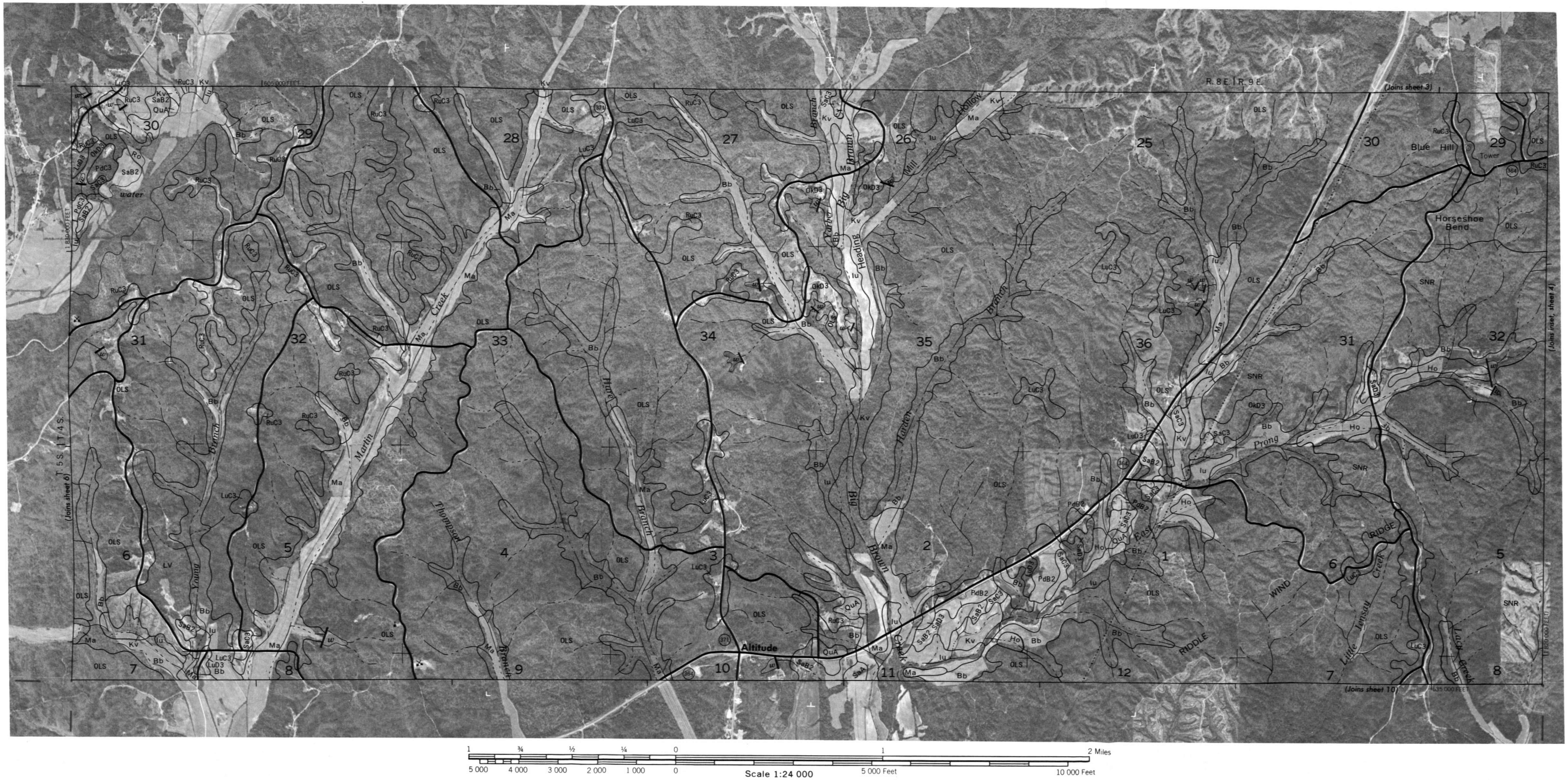
1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

Scale 1:24 000


5
N
Jumpertown
TIPPAH COUNTY
R. 6 E.
T. 5 S.
T. 4 S.
(Joins sheet 1)
(Joins sheet 6)
(Joins sheet 8)
Big Branch
Dry Creek
Gum Branch
King Hollow
Cox Lake
Wolf Creek
Osborne Creek
1 ¾ ½ ¼ 0 1 2 Miles
5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet
Scale 1:24 000

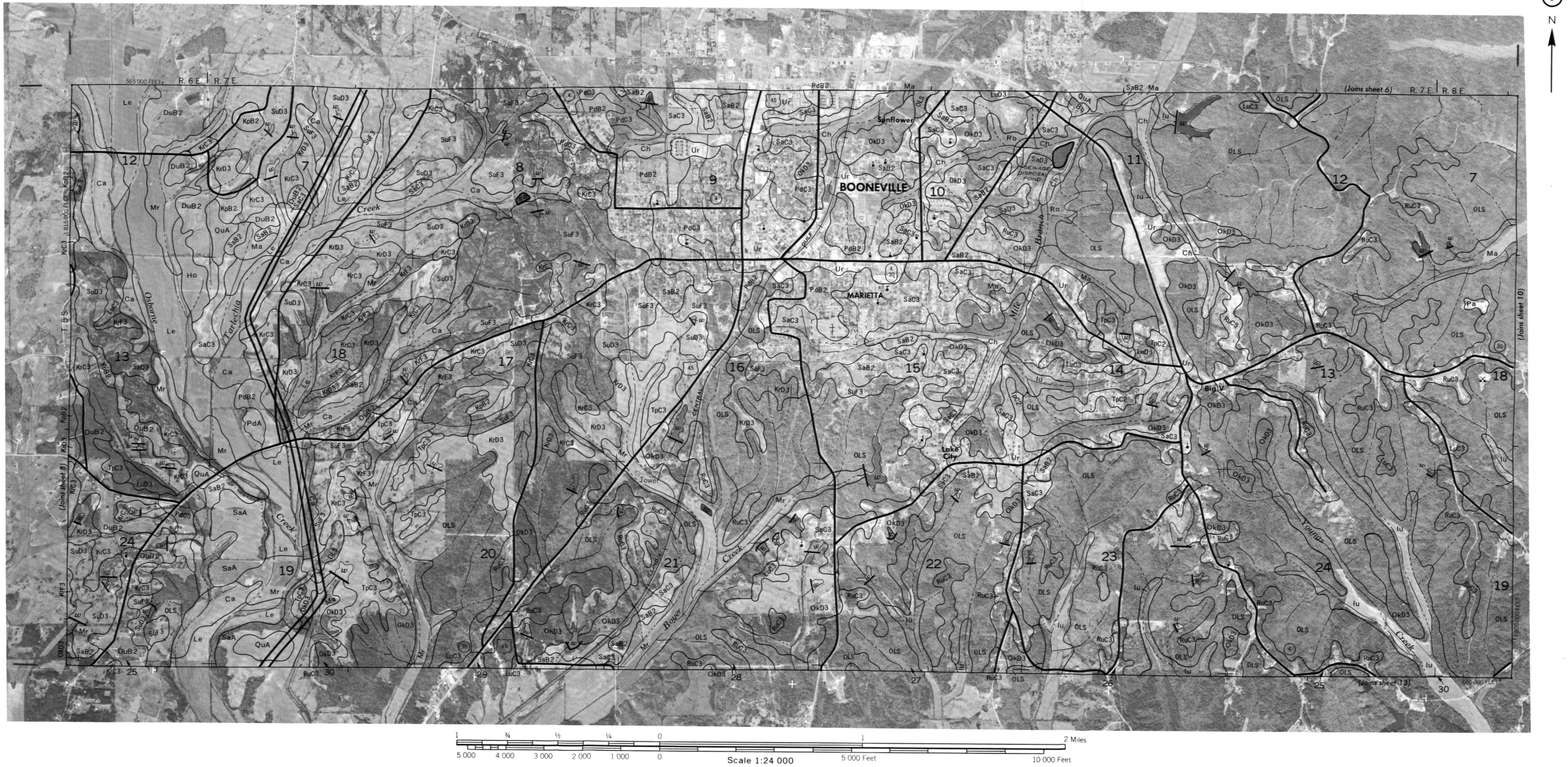

N
(Joins sheet 2)
(Joins sheet 5)
(Joins sheet 7)
(Joins sheet 9)
R. 6 E. | R. 7 E.
R. 7 E. | R. 8 E.
T. 4 S.
T. 5 S.
Gaston
Sunflower
Kings Creek
King Creek
RIVER
TUSCUMBIA
Brush Creek
Mile Branch
water
1 ¾ ½ ¼ 0 1 2 Miles
5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet
Scale 1:24 000


7
N
R. 8 E. | R. 9 E.
(Joins sheet 3)
(Joins sheet 6)
(Joins inset, sheet 4)
(Joins sheet 10)
T. 5 S. | T. 4 S.
Martin Creek
Young Branch
Thompson Branch
Hare Branch
Big Brown Creek
Barber Branch
Heading Branch
Mill Hollow
Harden Branch
East Prong
Little Yonsau Creek
Lick Creek
Blue Hill
Tower
Horseshoe Bend
WIND RIDGE
RIDDLE
Altitude
water
Scale 1:24 000
1 ¾ ½ ¼ 0 1 2 Miles
5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

N

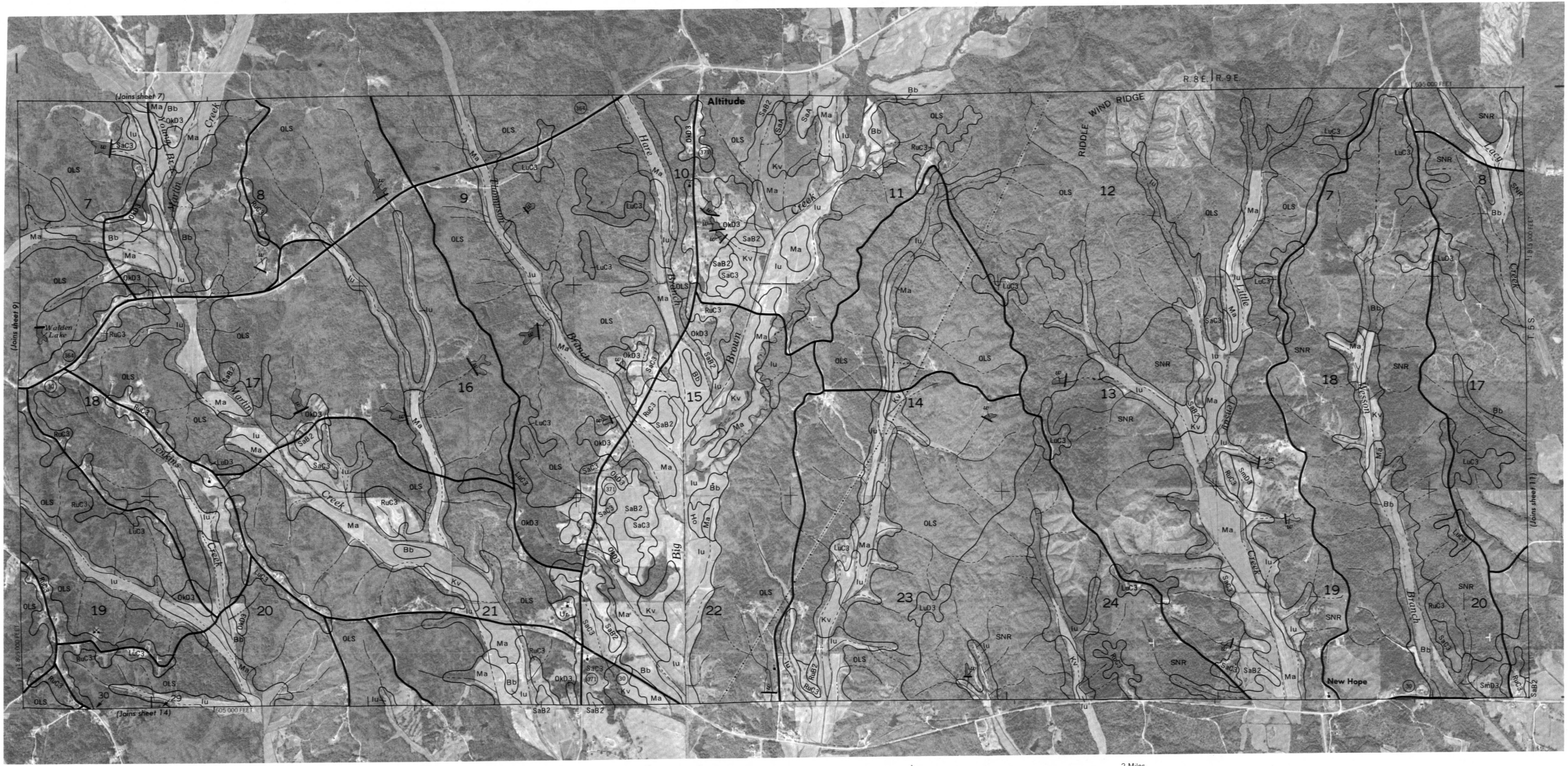
SOIL SURVEY OF PRENTISS COUNTY, MISSISSIPPI — SHEET NUMBER 8

SOIL SURVEY OF PRENTISS COUNTY, MISSISSIPPI — SHEET NUMBER 9



10

N



1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

Scale 1:24 000

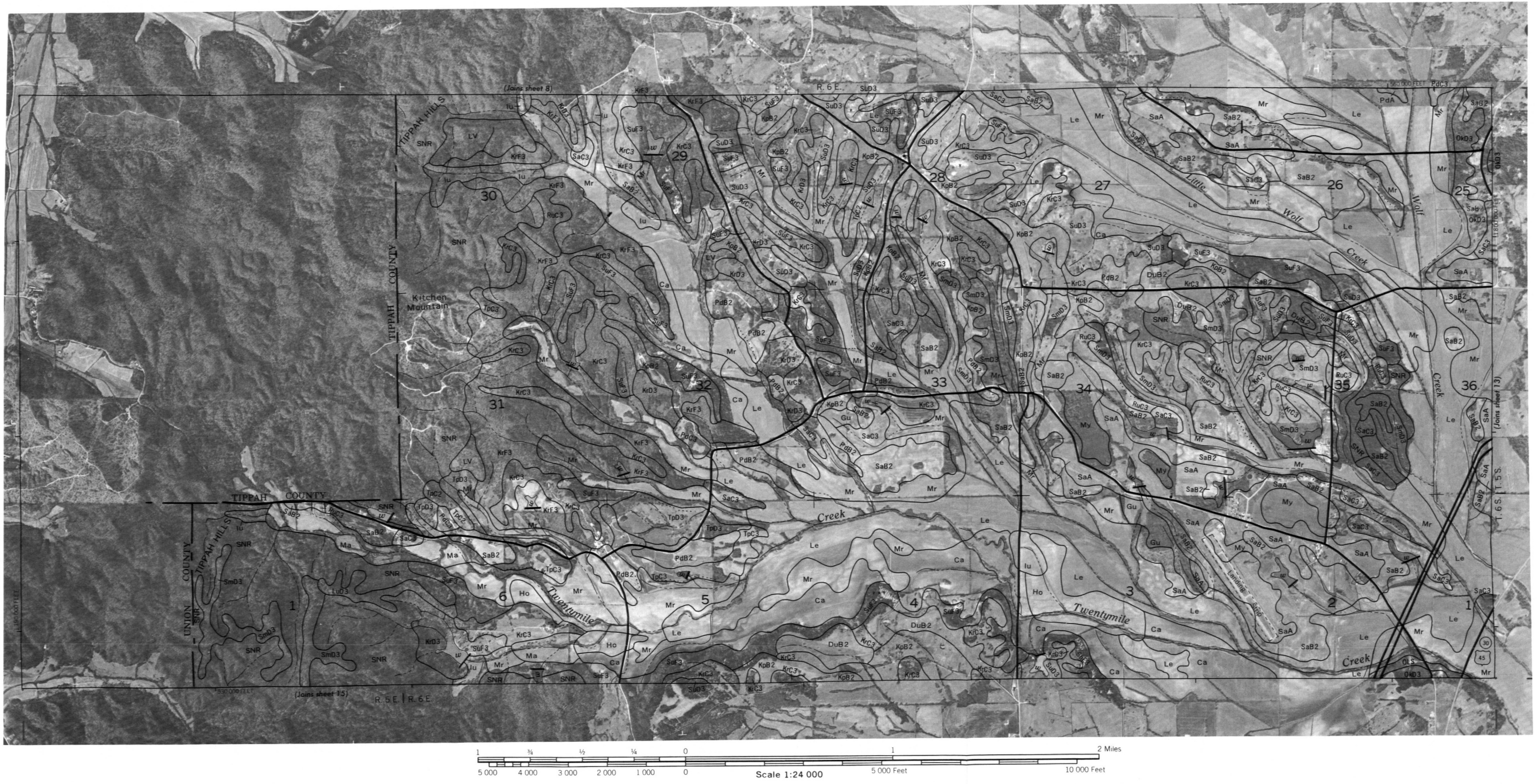
11

N

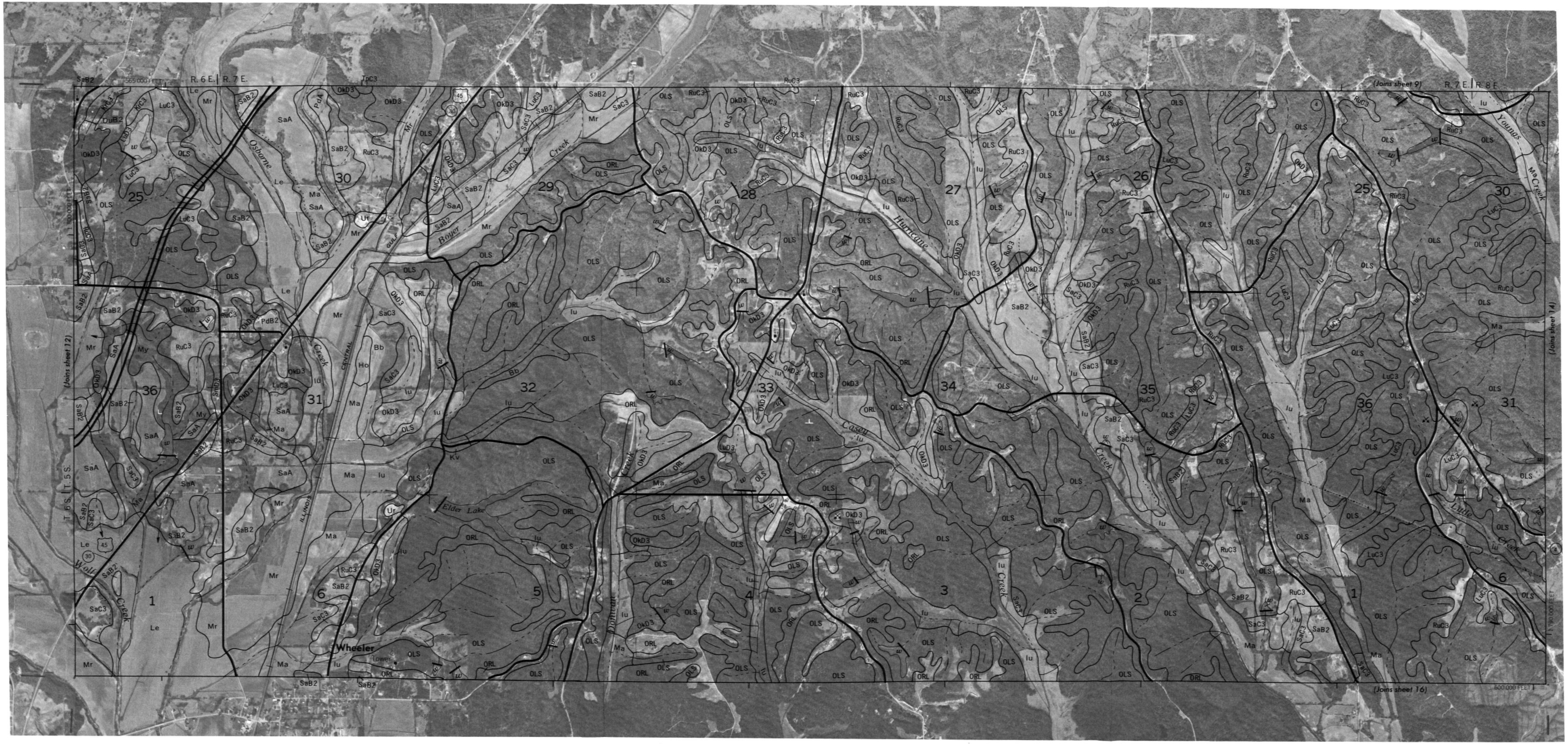
1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

Scale 1:24 000


N
(Joins sheet 8)
(Joins sheet 15)
(Joins sheet 13)
TIPPAH HILLS
TIPPAH COUNTY
UNION COUNTY
Kitchen Mountain
Little Wolf Creek
Wolf Creek
Twentymile Creek
Landing Strip
R. 5 E. | R. 6 E.
T. 5 S. | T. 6 S.
Scale 1:24 000
1 ¾ ½ ¼ 0 1 2 Miles
5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

N



1 ¾ ½ ¼ 0 1 2 Miles

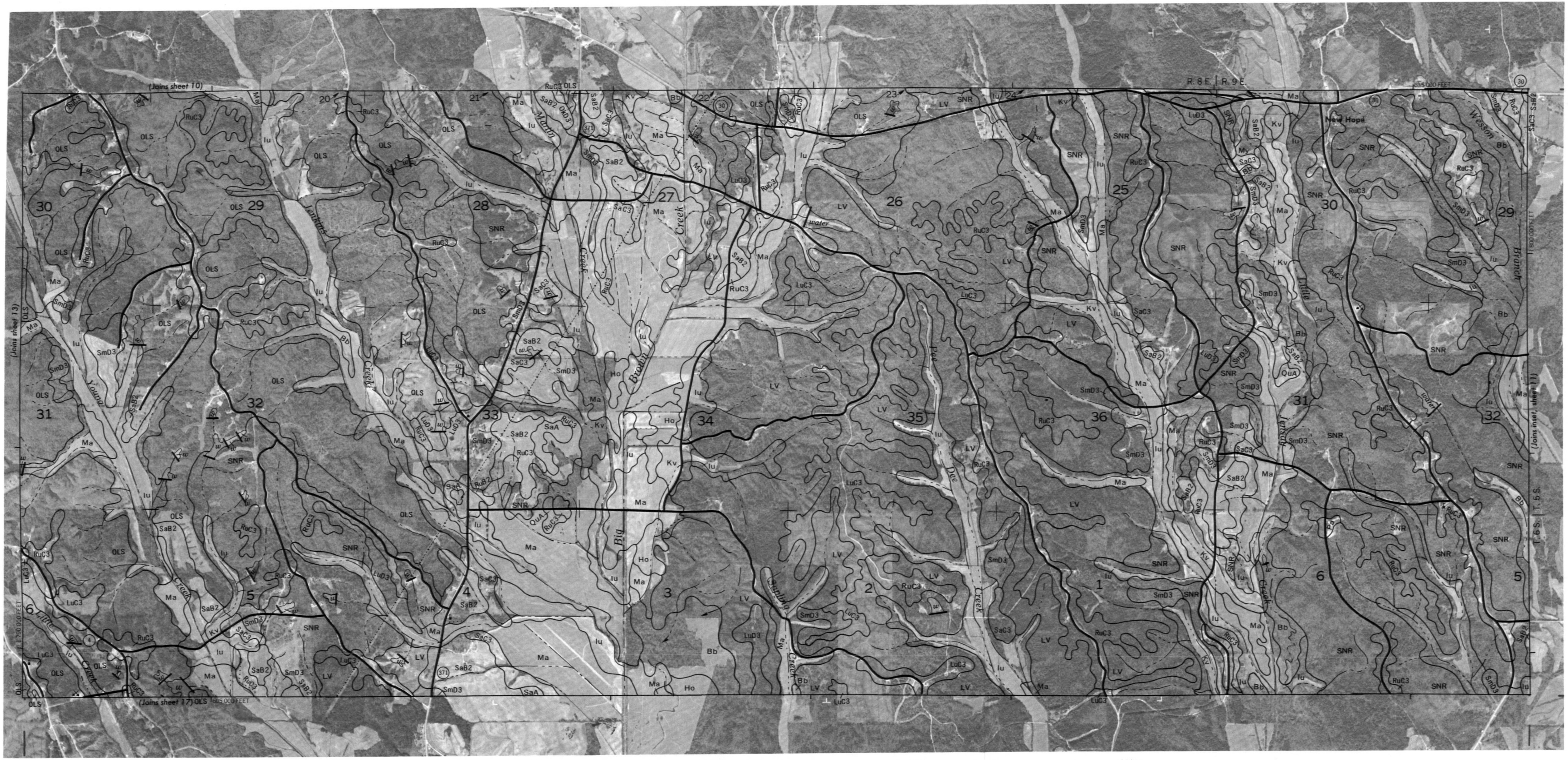
5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

Scale 1:24 000

14

SOIL SURVEY OF PRENTISS COUNTY, MISSISSIPPI — SHEET NUMBER 14

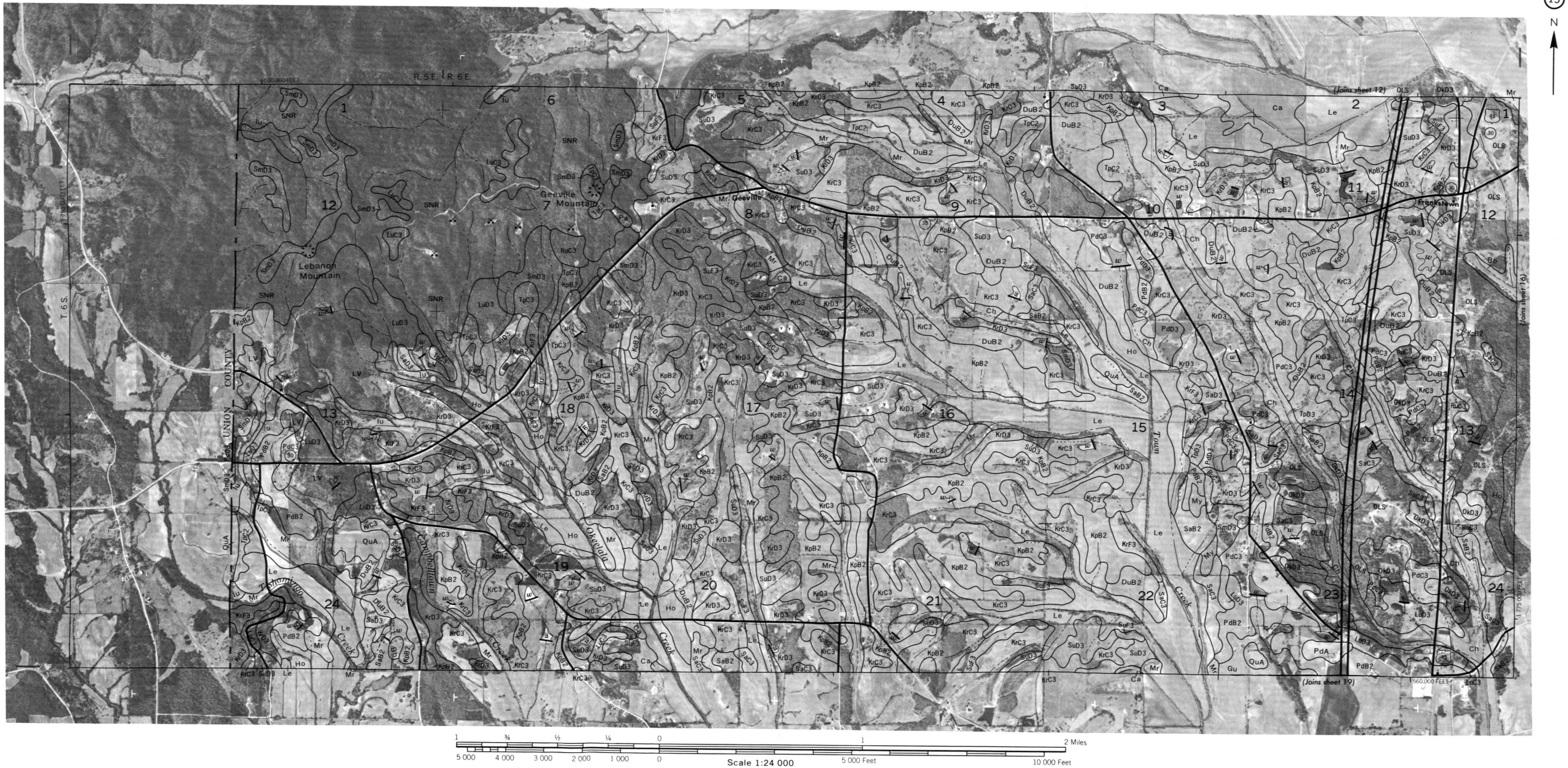
N



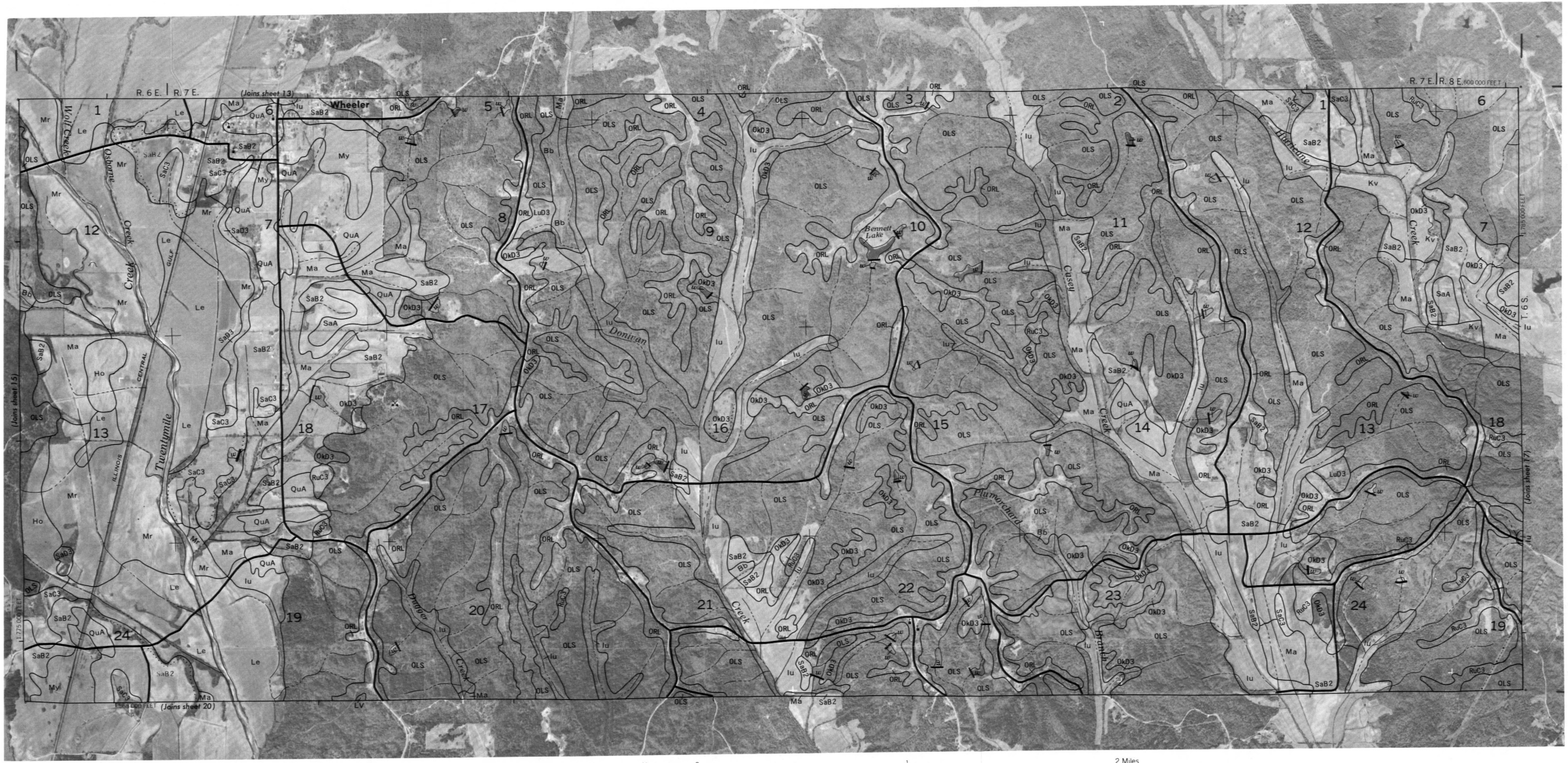
1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

Scale 1:24 000


N
(Joins sheet 12)
(Joins sheet 16)
(Joins sheet 19)
R. 5 E. | R. 6 E.
T. 6 S.
UNION COUNTY
Geeville Mountain
Lebanon Mountain
Geeville
Frankstown
Okeelala
Town Creek
Campbelltown
Tishomingo Creek
530 000 FEET
560 000 FEET
1 775 000 FEET
Scale 1:24 000
1 ¾ ½ ¼ 0 1 2 Miles
5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

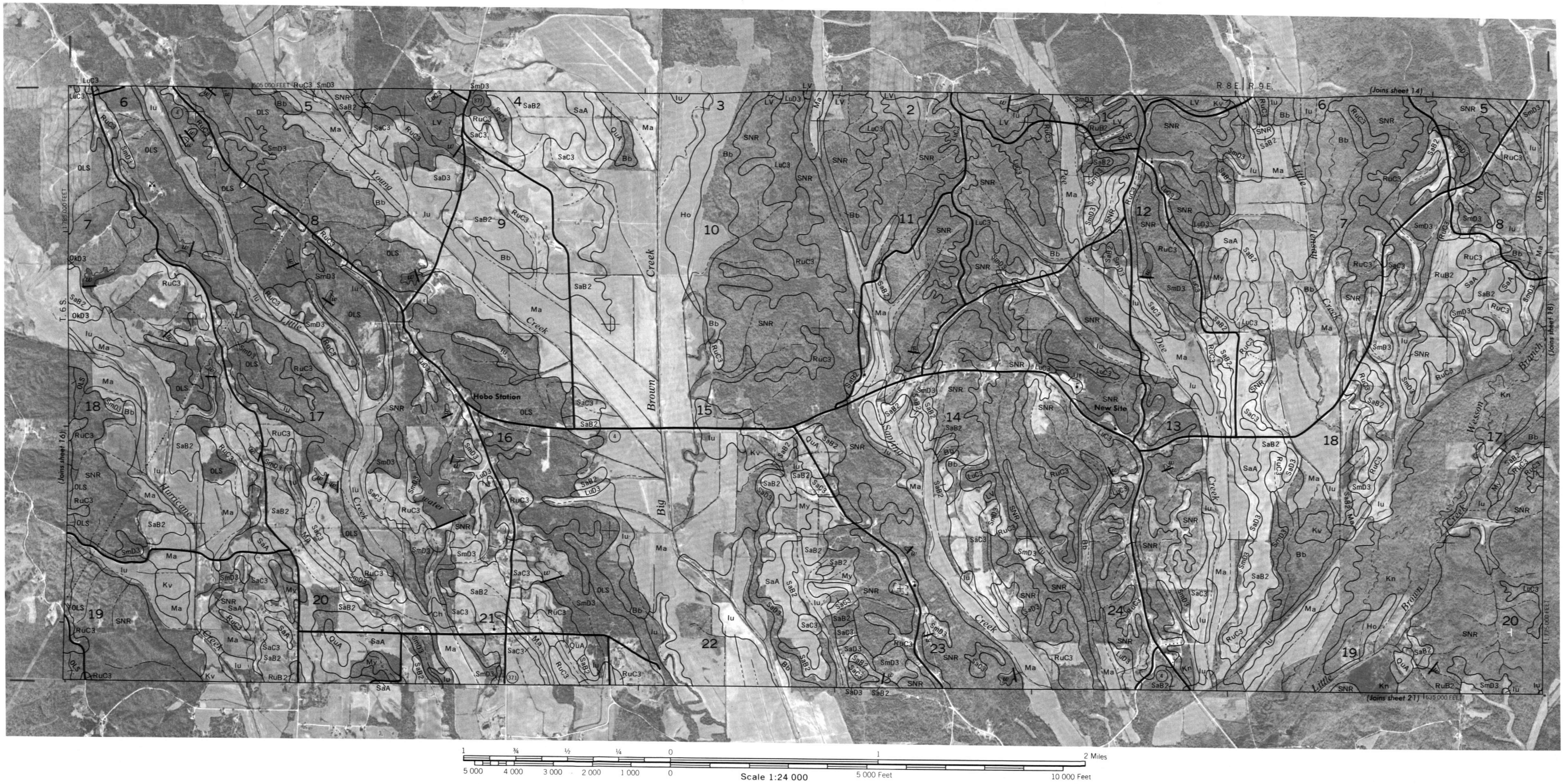
N



1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

Scale 1:24 000


N
(Joins sheet 14)
(Joins sheet 16)
(Joins sheet 18)
(Joins sheet 21)
R. 8 E. | R. 9 E.
T. 6 S.
Hobo Station
New Site
Young Creek
Little Creek
Hurricane Creek
Big Brown Creek
Sandy Creek
Pee Dee Creek
Little Yonaby Creek
Wesson Branch
Little Brown Creek
1 ¾ ½ ¼ 0 1 2 Miles
5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet
Scale 1:24 000

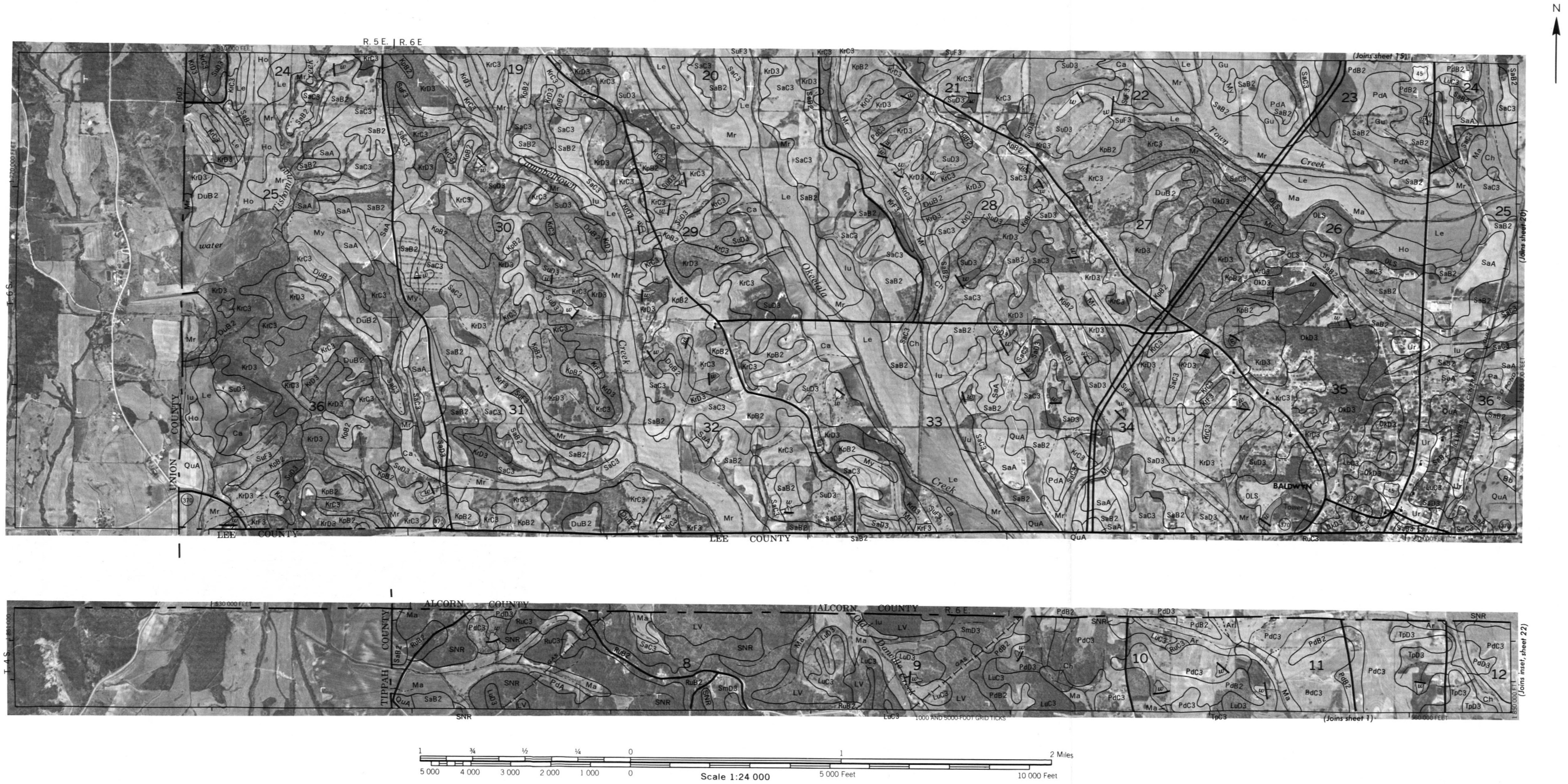
N

SOIL SURVEY OF PRENTISS COUNTY, MISSISSIPPI — SHEET NUMBER 18

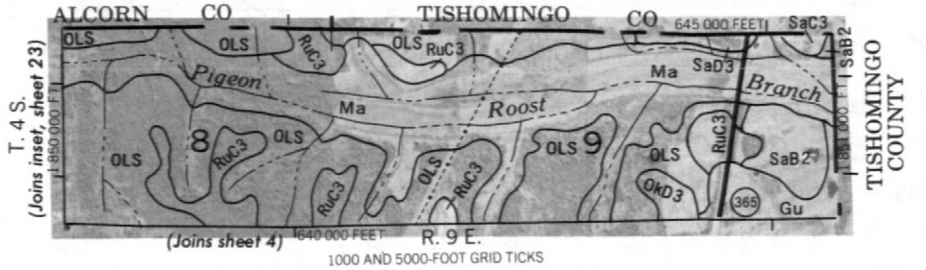
1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

Scale 1:24 000


N
R. 5 E. | R. 6 E.
(Joins sheet 15)
(Joins sheet 20)
T. 6 S.
UNION COUNTY
LEE COUNTY
Town Creek
BALDWYN
T. 4 S.
ALCORN COUNTY
TIPPAH COUNTY
R. 6 E.
(Joins inset, sheet 22)
(Joins sheet 1)
1000 AND 5000-FOOT GRID TICKS
2 Miles
5 000 Feet
10 000 Feet
Scale 1:24 000

SOIL SURVEY OF PRENTISS COUNTY, MISSISSIPPI — SHEET NUMBER 20



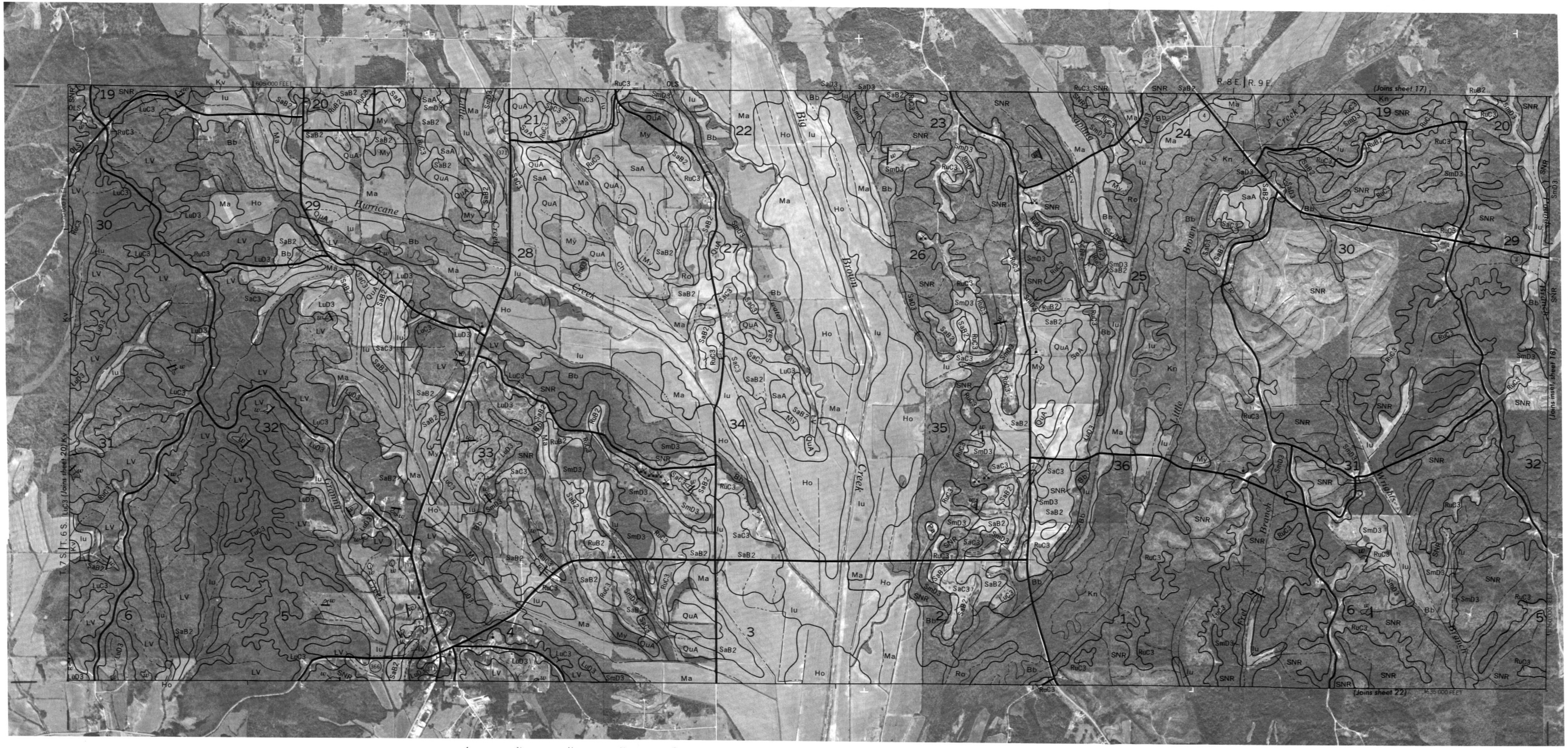
1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

Scale 1:24 000

21

N



1 ¾ ½ ¼ 0 1 2 Miles

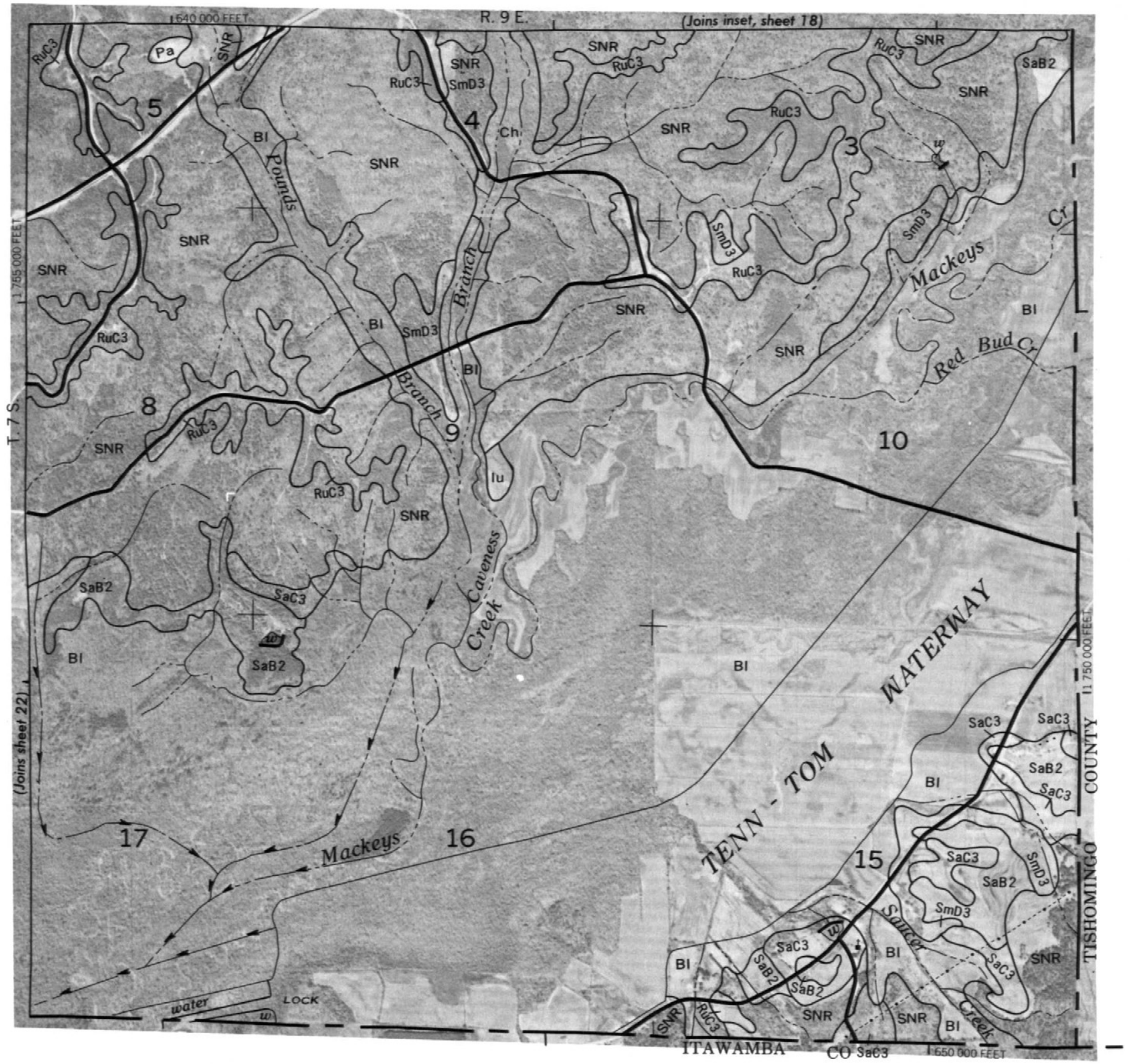
5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

Scale 1:24 000

N

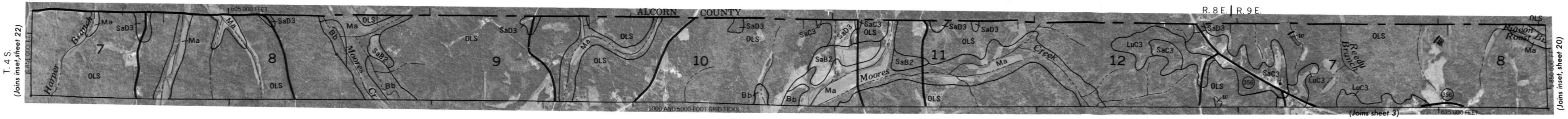
R. 8 E. | R. 9 E.
635 000 FEET
SaB2 (Joins sheet 21)
MARIETTA
Hazeldell
(Joins inset, sheet 23)
(Joins sheet 23)
1 750 000 FEET
605 000 FEET
ITAWAMBA COUNTY
Granny Creek
Big Brown Creek
Brown Creek
Little Brown Creek
Casey Creek
Donivan Creek
Fred Branch
Wrights Branch
ALCORN COUNTY
R. 6 E. | R. 7 E.
R. 7 E. | R. 8 E.
600 000 FEET
(Joins inset, sheet 19)
(Joins inset, sheet 23)
T. 4 S.
565 000 FEET
(Joins sheet 2)
Boone Creek
ILLINOIS CENTRAL
TUSCUMBIA R.
1000 AND 5000-FOOT GRID TICKS
1 ¾ ½ ¼ 0 1 2 Miles
5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet
Scale 1:24 000

N



INSET A

INSET B



1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 Feet 10 000 Feet

Scale 1:24 000